

# **APPENDIX A – 8**

## **Air Quality Conformity Analysis**

**MTC Resolution No. 3629**



Date: July 28, 2004  
W.I.: 1412  
Referred by: PAC

ABSTRACT

Resolution No. 3629

This resolution finds that the proposed 2005 Transportation Improvement Program is in conformance with the State Implementation Plan (SIP) to achieve National Ambient Air Quality Standards.

Date: July 28, 2004  
W.I.: 1412  
Referred by: PAC

RE: Approval of the Air Quality Conformity of the 2005 Transportation Improvement Program to the State Implementation Plan for Achieving and Maintaining National Ambient Air Quality Standards

METROPOLITAN TRANSPORTATION COMMISSION  
RESOLUTION NO. 3629

WHEREAS, the Metropolitan Transportation Commission (MTC) is the regional transportation planning agency for the San Francisco Bay Area pursuant to Government Code Section 66500 et seq.; and

WHEREAS, MTC is the designated Metropolitan Planning Organization (MPO) for the nine-county San Francisco Bay Area region (the region); and

WHEREAS, MTC has developed, in cooperation with the State, operators of publicly-owned mass transportation systems, and appropriate local government officials, the 2005 Transportation Improvement Program (TIP), based on regional priorities; and

WHEREAS, the 2005 TIP is scheduled for approval on July 28, 2004 (MTC Resolution No. 3630) upon the approval of this resolution; and

WHEREAS, MTC has conducted a transportation air quality conformity analysis for the 2005 TIP, in accordance with the Bay Area Air Quality Conformity Procedures (MTC Resolutions Nos. 2730 and 3075) adopted pursuant to Environmental Protection Agency regulations; and

WHEREAS, said conformity analysis is included as Attachment A of this resolution, and is incorporated herein as though set forth at length; and

WHEREAS, the conformity analysis has been circulated for public comment; now, therefore be it

RESOLVED, that MTC finds the proposed 2005 TIP, as set forth in MTC Resolution No. 3630, conforms to the applicable provisions of the State Implementation Plan, including the motor vehicle emissions budget contained in the 2001 Ozone Attainment Plan, and therefore be it

RESOLVED, that Executive Director shall forward a copy of this Resolution to those agencies receiving a copy of MTC Resolution No. 3630.

METROPOLITAN TRANSPORTATION COMMISSION

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Steve Kinsey, Chair

The above resolution was entered into by the Metropolitan Transportation Commission at a regular meeting of the Commission held in Oakland, California, on July 28, 2004.

Date: July 28, 2004  
W.I.: 1412  
Referred by: PAC

Attachment A  
Resolution No. 3629  
Page 1 of 2

**Transportation Air Quality Conformity Analysis  
for the 2004 Transportation Improvement Program (TIP)**

Copies of the full Conformity Analysis may be obtained from the MTC/ABAG Library. An excerpt on the conformity findings from the Conformity Analysis is provided below:

## **CONFORMITY FINDINGS**

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Based on the analysis, the following conformity findings are made:

- This conformity assessment was conducted consistent with EPA's regulations and with the Bay Area Air Quality Conformity Procedures adopted by MTC as Resolution No. 3075.
- The 2005 TIP provides for implementation of TCMs pursuant to the following federal regulation:
  - (1) *An examination of the specific steps and funding source(s) needed to fully implement each TCM indicates that TCMs which are eligible for funding under title 23 U.S.C. or the Federal Transit Laws are on or ahead of the schedule established in the applicable implementation plan, or, if such TCMs are behind the schedule established in the applicable implementation plan, the MPO and DOT have determined that past obstacles to implementation of the TCMs have been identified and have been or are being overcome, and that all State and local agencies with influence over approvals or funding for TCMs are giving maximum priority to approval or funding to TCMs over other projects within their control, including projects in locations outside the non-attainment or maintenance area.*
  - (2) *If TCMs in the applicable implementation plan have previously been programmed for Federal funding but the funds have not been obligated and the TCMs are behind the schedule in the implementation plan, then the TIP cannot be found to conform if the funds intended for those TCMs are reallocated to projects in the TIP other than TCMs, or if there are no other TCMs in the TIP, if the funds are reallocated to projects in the TIP other than projects which are eligible for Federal funding intended for air quality improvements projects, e.g., the Congestion Mitigation and Air Quality Improvement Program.*

*(3) Nothing in the TIP may interfere with the implementation of any TCM in the applicable implementation plan. (40 CFR Part 93.113(c)).*

- For carbon monoxide, motor vehicle emissions in the 2005 TIP are lower than the transportation conformity budget in the SIP.
- For Volatile Organic Compounds (VOC) and Nitrogen Oxides (NO<sub>x</sub>), motor vehicle emissions in the 2005 TIP are also lower than the transportation conformity budget in the SIP.

**FINAL**

**TRANSPORTATION AIR QUALITY  
CONFORMITY ANALYSIS**

**FOR  
2005 TRANSPORTATION IMPROVEMENT PROGRAM**

DRAFT: May 14, 2004  
FINAL: July 28, 2004

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**METROPOLITAN  
TRANSPORTATION  
COMMISSION**

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The Metropolitan Transportation Commission (MTC) has conducted a transportation air quality conformity analysis of the 2005 Transportation Improvement Program (TIP) in accordance with EPA's transportation conformity regulations and MTC's Bay Area Air Quality Conformity Procedures (MTC Resolution No. 3075). This report explains the basis for the conformity analysis and provides the results used by MTC to make a positive conformity finding. The TIP must be adopted every two years. The Regional Transportation Plan is currently being updated and a conformity finding will be required for the new Plan when it is adopted in early 2005.

## **INTRODUCTION**

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### **PURPOSE OF CONFORMITY ANALYSIS**

The 1990 Clean Air Act Amendments (CAAA) outlines requirements for ensuring that federal transportation plans, programs and projects conform to the State Implementation Plan's (SIP) purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards. The U.S. EPA subsequently published conformity regulations to implement the 1990 CAAA conformity requirements in November 1993, and revised them in August 1995, November 1995 and August 1997. Metropolitan Planning Organizations such as MTC are required to adopt and follow these regulations. MTC Resolution No. 3075 is the MTC resolution adopting EPA's most current regulation on conformity procedures for transportation plans, programs and projects. These revised conformity procedures were submitted to U.S. EPA in 1998.

These regulations and resolutions state, in part, that MTC cannot approve any transportation plan, program or project unless these activities conform to the purpose of the federal air quality plan (officially titled the State Implementation Plan, or SIP). "Transportation plan" refers to the Regional Transportation Plan (RTP). "Program" refers to the Transportation Improvement Program (TIP), which is a financially realistic set of highway and transit projects to be funded over the next three years. A "transportation project" is any highway or transit improvement, which is included in the RTP and TIP and requires funding or approval from the Federal Highway Administration or the Federal Transit Administration. Conformity regulations also affect regionally significant non-federally funded projects which must be included in a conforming plan and program.

### **STATUS OF REGIONAL TRANSPORTATION PLAN**

The 2001 Regional Transportation Plan is the current long range plan for the Bay Area adopted by MTC in December 2001 (MTC Resolution No. 3427). The Federal Highway Administration and Federal Transit Administration approved MTC's conformity determination for the 2001 RTP on March 18, 2002 (MTC Resolution No. 3432). The 2001 RTP represents the transportation policy and action statement of the MTC for addressing the region's transportation needs over the next 25 years. Any transportation project receiving federal or state transportation funds must be included in

the RTP. The planning horizon for the 2001 RTP is the year 2025. The projects included in the 2005 TIP are also included in the 2001 Regional Transportation Plan.

MTC is currently updating its 2001 RTP, known as the Transportation 2030 Plan (T2030). MTC plans to release a draft T2030 Plan for public review in fall 2004, and adopt a final T2030 Plan in winter 2005.

## **STATUS OF 2005 TRANSPORTATION IMPROVEMENT PROGRAM (TIP)**

Under federal programming requirements, MTC must adopt a new Transportation Improvement Program every two years. The last conforming Transportation Improvement Plan (TIP) was adopted by the Commission on January 22, 2003 (MTC Resolution No. 3500). MTC will release a draft 2005 TIP for public review on May 14, 2004. The 2005 TIP is financially constrained consistent with 23 CFR 450 (93.108). It represents a comprehensive listing of all Bay Area transportation projects that receive federal funds, are subject to a federally required action, or are locally funded and regionally significant. The list of 2005 TIP projects is contained in Appendix A (specific funding sources are identified in the TIP amendment itself), and unless otherwise stated, have been modeled for conformity purposes in the 2006 analysis year.

## **BAY AREA AIR POLLUTANT DESIGNATIONS**

On November 6, 1991, the U.S. Environmental Protection Agency (EPA) designated the Bay Area as a moderate ozone nonattainment area. Based on monitoring from 1990 to 1993, the co-lead agencies—Bay Area Air Quality Management District (BAAQMD), MTC, and Association of Bay Area Governments (ABAG)—determined that no ozone violations had occurred and requested the California Air Resources Board (ARB) to forward an ozone maintenance plan to U.S. EPA.

On May 25, 1995, the Bay Area was classified as an ozone maintenance area, having attained the 1-hour national ozone standard for five years (1990-1994). However, on July 10, 1998 the U.S. EPA published a Notice of Final Rulemaking redesignating the Bay Area back to an ozone nonattainment (unclassified) area. This action was due to violations of the 1-hour standard that occurred during the summers of 1995 and 1996, and became final on August 10, 1998.

On October 31, 2003, U.S. EPA proposed a finding of attainment of the national 1-hour ozone standard for the Bay Area. The proposed finding is based on monitoring data from 2001, 2002, and 2003. In April 2004, U.S. EPA made a final finding that the Bay Area has attained the national 1-hour ozone standard. Because of this finding, some of the elements of the 2001 Ozone Attainment Plan are no longer required. The finding of attainment does not mean the Bay Area has been reclassified as an attainment area for the 1-hour standard. To be reclassified, the region must submit a formal redesignation request to EPA. The Bay Area Air Quality Management District (BAAQMD), in conjunction with MTC and ABAG, are currently preparing

the Bay Area 2004 Ozone Strategy. The portion of the 2004 Ozone Strategy addressing national ozone planning requirements will include: (1) a redesignation request, and (2) a maintenance plan to show the region will continue to meet the 1-hour ozone standard.

In April 1998, the Bay Area was redesignated to a “maintenance area” for the national 8-hour carbon monoxide (CO) standard, having demonstrated attainment of the standards. As a maintenance area, the region must assure continued attainment of the CO standard.

## **MOTOR VEHICLE EMISSIONS BUDGETS**

The Bay Area has conformity requirements for both the federal ozone and CO standards. Under these requirements, the Bay Area has to meet a motor vehicle emission “budget” test for Volatile Organic Compounds (VOC), Nitrogen Oxides (NO<sub>x</sub>) and CO. To make a positive conformity finding, MTC must demonstrate that the calculated motor vehicle emissions in the region are lower than the approved budgets.

For the ozone precursor emissions VOC and NO<sub>x</sub>, the applicable transportation emissions budget was developed for the 2006 attainment year as part of the 2001 Ozone Attainment Plan and was subsequently approved by EPA. For CO, the CO budget was derived from the Final Carbon Monoxide Redesignation Request and Maintenance Plan Request for 10 Federal Planning Areas (herein after referred to as the Carbon Monoxide Maintenance Plan). The motor vehicle emission budgets are listed below:

VOC: 164 tons per day (2006 and beyond)

NO<sub>x</sub>: 270.3 tons per day (2006 and beyond)

CO: 2,193 tons per day (2010, the last year of the Maintenance Plan, and beyond)

On road motor vehicle emissions are analyzed for various horizon years that must not be more than 10 years apart, or more than 10 years from the base year used to validate the model (2000). For this conformity analysis, the horizon years are 2006, 2010, 2020, and 2025. MTC has prepared separate travel forecasts for the Bay Area for each of these years. These travel forecasts are then used to calculate motor vehicle emissions.

## APPROACH TO THE ANALYSIS

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Motor vehicle emissions for future years are estimated using MTC's travel demand forecast model (BAYCAST 2000), which estimates vehicle activity in the Bay Area, and the California Air Resources Board's latest model for determining motor vehicle emissions (EMFAC2002). The MTC travel demand model requires various inputs. MTC has used the latest planning assumptions for the purpose of preparing this TIP conformity analysis.

The MTC travel demand model requires various inputs, including demographic inputs for future population and employment growth in the Bay Area. This conformity analysis uses the socio-economic/land use forecast series *Projections 2003* developed by ABAG and the latest validated version of the MTC travel demand model (BAYCAST, 2000). The ABAG projections incorporate the new regional "Smart Growth" land use assumptions and have been approved for use in the conformity analysis by the US DOT and EPA, subject to preparation of a future monitoring report. The projections also reflect the near term effects of the current economic slowdown on job creation in the Bay Area. In addition to the demographic changes occurring over time, the travel demand model determines how changes in the highway, transit, and bicycle network affect people's travel behavior and ultimately the amount of vehicle activity that will occur in the region. The list of transportation projects that will occur in the Bay Area over the next 25 years and affect regional vehicle activity are shown in Appendix A (the 2005 TIP projects that will be operational in 2006) and Appendix B (projects in the long range transportation plan for 2010, 2020, and 2025).

Other key modeling inputs and methodological issues are detailed in Appendix C.

Motor vehicle emissions are then calculated by using the vehicle activity outputs from MTC's travel demand forecasting model for the various analysis years, together with the California Air Resources Board (ARB)'s latest motor vehicle emission model (EMFAC2002 version 2.2, April 23, 2003).). EMFAC2002 accounts for the effectiveness of the State's vehicle inspection and maintenance program, called Enhanced Smog Check Program in the Bay Area.

Because of differences between ARB's estimate of Bay Area Vehicle Miles of Travel (VMT) and the VMT estimates from MTC's travel demand forecast model, MTC adjusts the regional VMT forecasts (both regional and county level) upward after the initial vehicle activity forecasts are prepared. The process generally involves using the MTC model-predicted VMT growth rates and applying these growth rates to ARB's 2000 base year VMT. To account for this higher VMT in the emission calculations, MTC adjusts the vehicle populations (by county) in EMFAC 2002 per ARB's *Recommended Methods for Use of EMFAC2002 to Develop Motor Vehicle Emissions Budgets and Assess Conformity* (found at <http://www.arb.ca.gov/planning/sip/emfac2002/emfac2002.htm>). This methodology also ensures that evaporative hydrocarbon emissions are not underestimated.



In addition to regional and county VMT estimates, the amount of VMT occurring at different speeds is critical to the estimation of motor vehicle emissions. New speed distributions for 2006, 2010, 2020 and 2025 were applied to passenger cars (PC), light-duty trucks (T1, T2), medium-duty trucks (T3), and motorcycles (mcy) in EMFAC 2002. EMFAC2002 model “default” values were used for all other vehicle types (such as heavy duty trucks) and times of day. Separate peak period speed distributions were utilized for the AM and PM peak periods, while off-peak period speed distributions were employed during the hours representing the 18 off-peak hours of the daily travel demand assignment.

## **CONSULTATION PROCESS**

MTC has consulted on the preparation of the TIP conformity analysis and other conformity related issues with the Bay Area’s Air Quality Conformity Task Force. The Task Force reviews the assumptions going into the analysis, the results, and consults on TCM implementation issues. The Conformity Task Force is composed of representatives of U.S. EPA, ARB, FHWA, FTA, Caltrans, MTC, BAAQMD, ABAG, the nine county Congestion Management Agencies, and Bay Area transit operators. The meetings are open to the public and are regularly attended by interested members of the public. Topics covered in past meetings of this group include the following:

### **August 2003**

- Proposed Revisions to Conformity SIP – Interagency Consultation Procedures
- Proposed Revisions to SIP – General TCM Substitution Language
- Project Review: Change in Park-and-Ride Lot Location for Caltrain

### **January 2004**

- TCM 2 Substitution
- Use of Smart Growth Land Use (Projections 2003) in Conformity
- Proposed Revisions to Conformity SIP/Interagency Consultation Procedures
- MTC/SACOG MOU on Conformity

### **March 2004**

- Use of Smart Growth Land use (Projections 2003) in Conformity Analysis/Monitoring Report
- Conformity Analysis Assumptions for the 2005 TIP
- Proposed Revisions to Conformity SIP/Interagency Consultation Procedures
- MTC/SACOG MOU on Conformity

### **May 2004**

- Draft Conformity Analysis for 2005 TIP
- MTC/SACOG MOU on Conformity

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- Proposed Revisions to the SIP-General TCM Substitution Language

## TRANSPORTATION EMISSIONS BUDGETS

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As explained earlier, motor vehicle emissions budgets are established in the SIP for VOCs, NO<sub>x</sub> and carbon monoxide (CO). To make a positive conformity finding, the regional motor vehicle emissions must be equal to or less than these budgets. The results of the vehicle activity forecasts and motor vehicle emission calculations are shown below for each separate analysis year. For VOC and NO<sub>x</sub>, the motor vehicle emission budget also reflects anticipated emission reductions from five Transportation Control Measures (TCMs) incorporated in the 2001 Ozone Attainment Plan (Table 1).

**TABLE 1**  
**VOC AND NO<sub>x</sub> EMISSIONS BUDGETS FROM 2001 OZONE ATTAINMENT PLAN (TONS/DAY)**  
**(SF BAY AREA-EMFAC 2000)**

<b>VOC</b>	
2006 On Road Motor Vehicle Emissions	168.5
2006 Mobile Source Control Measure Benefits	(4.0)
2006 TCM Benefits	<u>(0.5)</u>
2006 Emissions Budget	164.0
 <b>NO<sub>x</sub></b>	
2006 On Road Motor Vehicle Emissions	271.0
2006 TCM Benefits	<u>(0.7)</u>
2006 Emissions Budget	270.3

**TABLE 2**  
**VEHICLE ACTIVITY FORECASTS**

	<b>2006</b>	<b>2010</b>	<b>2020</b>	<b>2025</b>
<b>Vehicles in Use</b>	5,136,452	5,530,648	6,444,199	6,720,675
<b>Daily VMT (1000s)</b>	174,522	187,029	211,021	217,764
<b>Engine Starts</b>	34,238,552	36,598,086	41,666,394	42,979,475

### Carbon Monoxide Maintenance Plan Budget.

The budget for carbon monoxide is derived from the Maintenance Plan and is 2,193 tons per day for 2010 and beyond.

### Comparison of Estimated Regional Motor Vehicle Emissions to the Budget.

The motor vehicle activity forecasts for the 2005 TIP for the various horizon years are converted to motor vehicle emission estimates by MTC using EMFAC2002 (version 2.2, April 23, 2003). EMFAC2002 includes the effects of the recently implemented (October 2003) enhanced Inspection/Maintenance program for the Bay Area with Test-Only stations. Since the 4.0 tons per day of Mobile Source Control Measure Benefits in Table 1 (from liquid leak inspections and low

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pressure evaporative test measures) are not included in EMFAC2002, MTC has used the latest CARB data on the projected effectiveness of these programs to separately estimate these emission reductions from these measures as shown below in Table 3A and Table 4. Also, while various Transportation Control Measures have not yet achieved their full effectiveness (see Table 4 for current estimate), they are expected to achieve the required cumulative total emission reductions by 2006. The motor vehicle emission estimates are substantially below the budget, due in large part to recent improvements in CARB's latest EMFAC model which reflect the effects of cleaner vehicles in the California fleet and the improved Smog Check program now in effect in the Bay Area.

**TABLE 3A**  
**EMISSIONS BUDGET COMPARISONS FOR OZONE**  
**(TONS/DAY USING SF BAY AREA-EMFAC 2000 AND EMFAC 2002, V2.2)**

Year	VOC Budget	On-Road Motor Vehicles VOC	Mobile Source Control Measures Benefit**	TCMs*	Net Emissions
2006	164.0	127.3	(2.30)	(0.3)	124.7
2010	164.0	94.0	(1.50)	(0.3)	92.2
2020	164.0	54.7	NC***	(0.3)	54.4
2025	164.0	44.3	NC***	(0.3)	44.0

Year	NO <sub>x</sub> Budget	On-Road Motor Vehicles NO <sub>x</sub>	TCMs*	Net Emissions
2006	270.3	251.1	(0.5)	250.6
2010	270.3	186.5	(0.5)	186.0
2020	270.3	87.9	(0.5)	87.4
2025	270.3	66.3	(0.5)	65.8

\*The transit services for TCM A Regional Express Bus Program were modeled. The emission benefits from TCM A are therefore included in the On-Road Motor Vehicles VOC and NO<sub>x</sub> emission inventories. The 0.2 tons per day emission benefits for VOC and NO<sub>x</sub> from TCM A are taken out of the TCM column.

\*\*In preparing the final conformity analysis, MTC staff investigated the status of the mobile source control measures benefit, and after discussions with the Air District and CARB, determined that the 4.0 tons per day benefits in Table 1 were not accounted for in EMFAC2002, V2.2, April 23, 2002. MTC subsequently obtained information from CARB with updated projections of the emission benefits from these control measures for the years 2005 and 2010. The emission reductions shown in Table 3A and Table 4 are based on the latest CARB data.

\*\*\*No emission reduction credits are taken for years 2020 and 2025 since the benefits of these programs are not required to demonstrate conformity and MTC does not have information to calculate future year reductions.

**TABLE 3B**  
**EMISSIONS BUDGET COMPARISONS FOR CARBON MONOXIDE**

Year	CO Budget	Estimated CO
2010	2,193	954.0

**TABLE 4  
TRANSPORTATION CONTROL MEASURES (TCMS) IN STATE IMPLEMENTATION PLAN  
(TONS PER DAY)**

<b>TCM</b>	<b>VOC Emission Reductions through May 2004</b>	<b>NOx Emission Reductions through May 2004</b>
Mobile Source Control Measure Benefits*	1.74	--
TCM A Regional Express Bus Program	0.12	0.12
TCM B Bicycle/Pedestrian Program	0	0
TCM C Transportation for Livable Communities	0	0
TCM D Expansion of Freeway Service Patrol	0.10	0.25
TCM E Transit Access to Airports	0.08	0.07
<b>Total Reductions</b>	<b>2.04</b>	<b>0.44</b>

\*See footnote \*\* for Table 3A.

## **TRANSPORTATION CONTROL MEASURES**

### **HISTORY OF TRANSPORTATION CONTROL MEASURES**

Transportation control measures (TCMs) are strategies to reduce vehicle emissions. They include such strategies as improved transit service and transit coordination, ridesharing services and new carpool lanes, signal timing, freeway incident management, increased gas taxes and bridge tolls to encourage use of alternative modes, etc. With the exception of the five new TCMs (A-E), the original set of TCMs have been completed. The TCMs were added over successive revisions to the SIP (see Table 5). For more information on TCMs 1-28, which are completed, see the last *Transportation Air Quality Conformity Analysis for the 2001 Regional Transportation Plan and FY 2001 Transportation Improvement Program Amendment 01-32 (February 2002)*. This report can be found in the MTC/ABAG Library.

- Twelve (12) ozone measures were originally listed in the 1982 Bay Area Air Quality Plan.
- In response to a 1990 lawsuit in the federal District Court, sixteen (16) additional TCMs were subsequently adopted by MTC in February 1990 as contingency measures to bring the region back on the "Reasonable Further Progress" (RFP) line. The Federal District order issued on May 11, 1992, found that these contingency TCMs were sufficient to bring the region back on the RFP track anticipated in the SIP. These measures became part of the SIP when U.S. EPA approved the 1994 Ozone Maintenance Plan.

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- Two (2) transportation control measures from the 1982 Bay Area Air Quality Plan apply to Carbon Monoxide control strategies, for which the region is in attainment with the federal standard, and primarily targeted downtown San Jose (which had the most significant CO problem at that time.) MTC also adopted a set of TCM enhancements in November 1991 to eliminate a shortfall in regional carbon monoxide emissions identified in the District Court's April 19, 1991 order. Carbon monoxide standards have been achieved primarily through the use of oxygenated/reformulated fuels in cars and with improvements in the Smog Check program.
- As part of EPA's partial approval/partial disapproval of the 1999 Ozone Attainment Plan, four (4) TCMs were deleted from the ozone plan (but two of these remain in the Carbon Monoxide Maintenance Plan).
- Five (5) new Transportation Control Measures were adopted as part of the new 2001 1-Hour Ozone Attainment Plan and are fully funded in the TIP and 2001 Regional Transportation Plan.

With respect to TCM 2 from the 1982 SIP, there has been a protracted debate, leading to a citizens lawsuit in federal court, about the obligations associated with this TCM. On April 6, 2004 MTC prevailed in the U.S. Court of Appeals for the Ninth Circuit which concluded that TCM 2 does not impose any additional enforceable obligation on MTC to increase ridership on public transit ridership by 15% over 1982-83 levels by November 2006 (Bayview Hunters Point Community Advocates v. Metropolitan Transportation Com'n, (2004 WL 728247, 4 Cal. Daily Op. Serv. 2919, 2004 Daily Journal D.A.R. 4209, 9<sup>th</sup> Cir.(Cal.), Apr 06, 2004)). Thus TCM 2 has been resolved, and there are no further implementation issues to address in this TCM.

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**TABLE 5  
TRANSPORTATION CONTROL MEASURES (TCMS) IN THE STATE IMPLEMENTATION PLAN**

<i>TCM</i>	<i>Description</i>
<b><i>Original TCMs from 1982 Bay Area Air Quality Plan</i></b>	
TCM 1	Reaffirm Commitment to 28 percent Transit Ridership Increase Between 1978 and 1983
TCM 2	Support Post-1983 Improvements in the Operators' Five-Year Plans and, After Consultation with the Operators, Adopt Ridership Increase Target for the Period 1983 through 1987
TCM 3	Seek to Expand and Improve Public Transit Beyond Committed Levels
TCM 4	High Occupancy Vehicle (HOV) Lanes and Ramp Metering
TCM 5	Support RIDES Efforts
TCM 6*	Continue Efforts to Obtain Funding to Support Long Range Transit Improvements
TCM 7	Preferential Parking
TCM 8	Shared Use Park and Ride Lots
TCM 9	Expand Commute Alternatives Program
TCM 10	Information Program for Local Governments
TCM 11**	Gasoline Conservation Awareness Program (GasCAP)
TCM 12**	Santa Clara County Commuter Transportation Program
<b><i>Contingency Plan TCMs Adopted by MTC in February 1990(MTC Resolution 2131)</i></b>	
TCM 13	Increase Bridge Tolls to \$1.00 on All Bridges
TCM 14	Bay Bridge Surcharge of \$1.00
TCM 15	Increase State Gas Tax by 9 Cents
TCM 16*	Implement MTC Resolution 1876, Revised — New Rail Starts
TCM 17	Continue Post-Earthquake Transit Services
TCM 18	Sacramento-Bay Area Amtrak Service
TCM 19	Upgrade Caltrain Service
TCM 20	Regional HOV System Plan
TCM 21	Regional Transit Coordination
TCM 22	Expand Regional Transit Connection Ticket Distribution
TCM 23	Employer Audits
TCM 24	Expand Signal Timing Program to New Cities
TCM 25	Maintain Existing Signal Timing Programs
TCM 26	Incident Management on Bay Area Freeways
TCM 27	Update MTC Guidance on Development of Local TSM Programs
TCM 28	Local Transportation Systems Management (TSM) Initiatives
<b><i>New TCMs in 2001 Ozone Attainment Plan</i></b>	
TCM A	Regional Express Bus Program
TCM B	Bicycle/Pedestrian Program
TCM C	Transportation for Livable Communities
TCM D	Expansion of Freeway Service Patrol
TCM E	Transit Access to Airports
*Deleted by EPA action from ozone plan	
**Deleted by EPA action from ozone plan, but retained in Carbon Monoxide Maintenance Plan.	

*Source: Bay Area Air Quality Management District, Metropolitan Transportation Commission, 2001.*

## **STATUS OF TRANSPORTATION CONTROL MEASURES**

The conformity analysis must demonstrate that TCMs are being implemented on schedule (40 CFR 93.113). TCMs A-E have specific implementation steps which are used to determine progress in advancing these TCMs (see Table 6). The TCMs are to be implemented by 2006. The cumulative emission reductions expected from all five TCMs is 0.5 tons per day of VOC and 0.7 tons per day of NOx. These TCMs were approved into the SIP as part of EPA's Finding of Attainment for the San Francisco Bay Area (April 2004).



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For 2005 Transportation Improvement Program*

**TABLE 6**  
**FEDERAL TRANSPORTATION CONTROL MEASURES FOR OZONE**

#	TCM	Description	Ozone Attainment Plan Implementation Schedule	Implementation Status
A	Regional Express Bus Program	Program includes purchase of approximately 90 low emission buses to operate new or enhanced express bus services. Buses will meet all applicable CARB standards, and will include particulate traps or filters. MTC will approve \$40 million in funding to various transit operators for bus acquisition. Program assumes transit operators can sustain service for a five year period. Actual emission reductions will be determined based on routes selected by MTC.	FY 2003. Complete once \$40 million in funding pursuant to Government Code Section 14556.40 is approved by the California Transportation Commission and obligated by bus operators	\$40 million for this program was allocated by the CTC in August, 2001. The participating transit operators have ordered and received a total of 94 buses. All buses are expected to be operational by 2006.
B	Bicycle / Pedestrian Program	Fund high priority projects in countywide plans consistent with TDA funding availability. MTC would fund only projects that are exempt from CEQA, have no significant environmental impacts, or adequately mitigate any adverse environmental impacts. Actual emission reductions will be determined based on the projects funded.	FY 2004 – 2006. Complete once \$15 million in TDA Article 3 is allocated by MTC.	MTC anticipates allocating about half of the \$15 million in FY2004 and FY2005. Should less than the \$15 million be allocated during those two years, then the remainder would be allocated during FY2006.

*Transportation Air Quality Conformity Analysis  
For 2005 Transportation Improvement Program*

#	TCM	Description	Ozone Attainment Plan Implementation Schedule	Implementation Status
C	Transportation for Livable Communities (TLC)	Program provides planning grants, technical assistance, and capital grants to help cities and nonprofit agencies link transportation projects with community plans. MTC would fund only projects that are exempt from CEQA, have no significant environmental impacts, or adequately mitigate any adverse environmental impacts. Actual emission reductions will be based on the projects funded.	FY 2004 – 2006. Complete once \$27 million in TLC grant funding is approved by MTC	In December 2003, the Commission reaffirmed its commitment of \$27 million annually over 25 years for the TLC program as part of Phase 1 of the Transportation 2030 Plan.  MTC anticipates approving a total \$27 million in TLC grant funding by FY 2006. By December 2004, MTC will approve \$18 million in TLC funding for the regional TLC Planning Program and Capital Program, and by December 2005, the county Congestion Management Agencies (CMAs) will implement the remaining \$9 million in their county-level TLC Capital Program.
D	Additional Freeway Service Patrol	Operation of 55 lane miles of new roving tow truck patrols beyond routes which existed in 2000. TCM commitment would be satisfied by any combination for routes adding 55 miles. Tow trucks used in service are new vehicles meeting all applicable CARB standards.	FY 2001. Complete by maintaining increase in FSP mileage through December 2006	FSP continues to maintain the operation of the 55 lane miles of new roving tow truck coverage. No problems are anticipated in maintaining this level of service through 2006.
E	Transit Access to Airports	Take credit for emission reductions from air passengers who use BART to SFO, as these reductions are not included in the Baseline.	BART – SFO service to start in FY 2003. Complete by maintaining service through December 2006	Service began June, 2003. Adjustments to current service levels are being considered.

## RESPONSE TO PUBLIC COMMENTS

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This section responds to written comments received on the conformity analysis. Each comment is numbered, and the response is provided using the same number combination.

*The following public comment was received from Mr. David Schonbrunn in a letter dated June 28, 2004:*

**Comment 1:** TRANSDEF is still unaware of a viable explanation of why the adjustment to ARB's Bay Area VMT that comes from MTC's travel demand model results in speeds that are meaningful in the generation of an air emissions analysis. The Draft Transportation Air Quality Conformity Analysis states that "New speed distributions...were applied to passenger cars..." but fails to explain where these distributions come from. Because the VMT adjustments result in higher volumes of vehicles using the same constrained roadways as the lower volumes predicted by MTC's model, it continues to boggle the mind as to why the average speeds should be assumed to be the same as those produced by the model, and why those speeds would produce motor vehicle emissions numbers that are in any way meaningful. The problem here is the ongoing discrepancy between MTC's prediction of VMT and ARB/BAR's method. There needs to be resolution.

**Response 1:** MTC divides the forecasted Bay Area vehicle miles of travel (VMT) for the 2006, 2010, 2020 and 2025 analysis years into various vehicle speed classes in order to calculate vehicle emissions. MTC's conformity procedures require that the VMT estimated by the MTC travel demand model be adjusted upwards to match the VMT used by ARB in its air quality planning work. This is a conservative approach to the conformity analysis, since higher VMT will yield higher emissions. However, since the source of the additional ARB VMT is unknown, there is no defensible basis to adjust the vehicle speed distributions extracted from the travel model post-processed highway assignments; thus MTC uses the model-based speed distributions as it has in previous conformity analyses and with the agreement of ARB.

The correct approach, as alluded to by the commenter, is to work with ARB on a protocol for reconciling the different Bay Area VMT values. MTC proposes to discuss an approach to accomplish this reconciliation with ARB and plan to discuss this issue with the Conformity Task Force in future meetings. This reconciliation will involve the used of different data source, such as data from HPMS (Highway Performance Monitoring System), BAR (Bureau of Automotive Repair), household travel surveys and commercial vehicle model and other sources, since no single data set can capture all the elements that contribute to the total vehicle miles of travel in the region.

## CONFORMITY FINDINGS

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Based on the analysis, the following conformity findings are made:

- This conformity assessment was conducted consistent with EPA's regulations and with the Bay Area Air Quality Conformity Procedures adopted by MTC as Resolution No. 3075.
- The 2005 TIP provides for implementation of TCMs pursuant to the following federal regulation:
  - (1) *An examination of the specific steps and funding source(s) needed to fully implement each TCM indicates that TCMs which are eligible for funding under title 23 U.S.C. or the Federal Transit Laws are on or ahead of the schedule established in the applicable implementation plan, or, if such TCMs are behind the schedule established in the applicable implementation plan, the MPO and DOT have determined that past obstacles to implementation of the TCMs have been identified and have been or are being overcome, and that all State and local agencies with influence over approvals or funding for TCMs are giving maximum priority to approval or funding to TCMs over other projects within their control, including projects in locations outside the non-attainment or maintenance area.*
  - (2) *If TCMs in the applicable implementation plan have previously been programmed for Federal funding but the funds have not been obligated and the TCMs are behind the schedule in the implementation plan, then the TIP cannot be found to conform if the funds intended for those TCMs are reallocated to projects in the TIP other than TCMs, or if there are no other TCMs in the TIP, if the funds are reallocated to projects in the TIP other than projects which are eligible for Federal funding intended for air quality improvements projects, e.g., the Congestion Mitigation and Air Quality Improvement Program.*
  - (3) *Nothing in the TIP may interfere with the implementation of any TCM in the applicable implementation plan. (40 CFR Part 93.113(c)).*
- For carbon monoxide, motor vehicle emissions in the 2005 TIP are lower than the transportation conformity budget in the SIP.
- For Volatile Organic Compounds (VOC) and Nitrogen Oxides (NO<sub>x</sub>), motor vehicle emissions in the 2005 TIP are also lower than the transportation conformity budget in the SIP.

APPENDIX **A**  
LIST OF ROADWAY AND TRANSIT PROJECTS IN THE  
2005 TRANSPORTATION IMPROVEMENT PROGRAM

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	HIGHWAY MODELED PROJECT LIST	
County	Project	
Alameda	I-80 (Toll Plaza to CC Co.line): HOV3+ widening. 8 to 10 lanes (HOV ramps at Cutting Blvd) & EB HOV through Distribution Structure	10 lanes
Alameda	Rte.61 (Island Dr. to I-880/98 th): Widen/new 2 to 4 lane Exp.	2 lanes
Alameda	I-580/680 IC: SB I-680 to EB I-580	2 lanes
Alameda	I-580/680 IC: SB I-680 to EB I-580 - Dublin Blvd.: SB on&off, NB-on hook-ramps	
Alameda	Rte.61 (Harbor Bay to Island Dr.): Widen 2 to 4 lane Exp.	4 lanes
Alameda	Rte.238 (I-580 to Harder): New 4 lane Expwy (no WB580 -> SB238 connector)	4 lanes
Alameda	Rte.84 (Portola to W.Southfront): Widen 4 to 6 lanes	6 lanes
Alameda	I-880: widen Auto mall OC 2 to 6 lanes	6 lanes
Alameda	I-880: widen Auto mall OC 2 to 6 lanes - Add SB-on and NB-on loop ramps	
Alameda	Redwood Rd. (Castro Valley to I-580): widening and signal timing	6 lanes
Alameda	I-880 (Alvarado Niles to Mission): HOV2+ widening.6 to 8 lanes	8 lanes
Alameda	Rte.24/Rte.13 I/C: EB24-SB13 & NB13- WB24 (one lane ramps)	
Alameda	I-80 WB to I-880 SB (McArthur Maze): widen connector 2 -> 3 lanes	
Alameda	Rte. 84 (through Pigeon Pass): 2 lane Expwy with passing lanes	
Alameda	Rte. 84 (I-580 to Vallecito): 4 lane expressway & <b>New IC at I-580</b>	
Alameda	Rte. 84 (I-880 to Newark Blvd.): extend HOV2+ lane	
Alameda	Rte. 92 (I-880 to Toll Plaza) widen 4 to 6 lanes	
Alameda	Rte. 92 (Toll Plaza - SM Co. line) widen 4 to 6 lanes	
Alameda	I-580/San Ramon Rd/Foothill Rd IC: replace existing interchange with a partial cloverleaf interchange, and widen EB off-ramp to lanes and provide EB aux lane	
Alameda	I-580/Fallon/El Charro Rd IC: widen existing Fallon Rd/El Charro Rd overcrossing to 2 lanes in each direction and reconstruct the interchange ramps	
Alameda	I-580/Tassajara Road/Santa Rita Road IC: widen NB overcrossing 2 -> 3 lanes Tassajara Rd OC, auxiliary lane EB I-580 (Santa Rita Road to El Charro Rd), reconstruct ramps	
Alameda	I-580/Hacienda Drive IC: widen WB I-580 on-ramp to accommodate an HOV lane, install ramp metering and widen EB I-580 off-ramp to provide an additional left-turn lane	
Alameda	I/580 Castro Valley: WB off-ramp to Castro Valley Blvd. w. Center, EB on-ramp from Redwood	
Alameda	I-580 ("Phase 1": Tassajara-New Rte 84 IC): HOV2+	
Alameda	I-680 (North of I-580 to CC Co.line): HOV2+ widening 6 to 8 lanes	
Alameda	I-880 Cypress Reconstruction:	
Alameda	I-980 to 7th; 6 lanes	
Alameda	7th to Grand: 6 lanes + 1 NB HOV3+ lane	
Alameda	2 lane connectors: NB 880 to EB 80; WB 80 to SB 880; EB 80 to SB 880	
Alameda	NB 880 to WB 80 (plus 1 HOV3+ lane)	
Alameda	Grand Connector (2 mixed plus 1 WB HOV 3+)	

Alameda	Frontage Rd (4 lanes): 7th to Grand	
Alameda	I-880 SB HOV (Marina to Rte. 238)	
Alameda	I-880 Jackson/Broadway IC: add SB on ramp from MLK & aux lane	
Alameda	I-880/Rte.92 Reliever route & Clawiter/Whitesell IC: connect streets & new IC	
Alameda	Thornton Ave (proximity of Hickory St): widen to 4 lanes	
Alameda	Marina Blvd. widening (Alvarado to San Leandro Blvd.)	
Alameda	Dublin Blvd. (Donlon to Village Pkwy): 4 to 6 lanes & signal coor.	
Alameda	Dublin Blvd (Village Pkwy to Sierra Ct.): 4 to 6 lane widening	
Alameda	Mandela Extension (4 lane major arterial)	
Alameda	Oakland Airport Roadway (new 4 lane facility: Harbor to Airport Blvd.)	
Alameda	Local Streets and Roads: Hesperian (Rte. 185 to Rte.84)	
Alameda	Lewelling Blvd. (Hesperian to Paradise Blvd.): widen to 4 lanes	
Alameda	Stevenson Blvd. (Blacow to I-880): widen 4 to 6 lanes	
Alameda	Westgate Extension (Davis St. to Williams St.): new arterial	
Alameda	TOS on all major freeways (13, 24, 80, 580, 880)	
Alameda	TOS on I-880 (I-980 to Santa Clara County line)	
Alameda	"D" St. (Second to Grand): widen 2 to 4 lanes	
Alameda	Sycamore (Thornton to Mayhews): widen 2 to 4 lanes	
Alameda	Bay St. Extension (Powell to 64th St.): widen 2 to 4 lanes	
Alameda	Dublin Blvd. II (Village Prkwy.-Sierra Court): widen 4 to 6 lanes	
Contra Costa	I-680 (Benicia Bridge): New bridge span NB 5 lanes SB 4 lanes. New HOV2+ toll plaza by-pass	9 lanes
Contra Costa	Rte.4 (I-80 to Cummings Skyway): widen to 4 lanes	Expwy
Contra Costa	Rte.4 (Willow Pass to Bailey Rd) widening (4 to 6 mixed lanes)	
Contra Costa	Rte.4 (Rte. 242 to Bailey Rd): widening 6 mixed lanes + 2 HOV	
Contra Costa	Rte.4 (Bailey Rd. to Railroad): widening 6 mixed lanes + 2 HOV	
Contra Costa	Rte. 4 (Railroad to Loveridge): widen 6 mixed lanes + 2 HOV	
Contra Costa	Rte. 4 (Somersville to Rte. 160): widen 4 to 6 mixed lanes	
Contra Costa	Rte. 4/Hillcrest IC: widen EB off-ramp to 2 lanes	
Contra Costa	Rte.4 (Rte.160 to Big Break Rd.) widen 2 to 4 lanes	
Contra Costa	Rte. 4 (Empire Ave. to Vintage Pkwy) widen 2 to 4 lanes	
Contra Costa	Rte. 4 (Bayberry Ave. to Rte.4 EB): build on-ramp	
Contra Costa	Rte.4 Bypass ( Rte.4/160 to Lone Tree Way): 4 lane Expwy	
Contra Costa	Rte.4 Bypass (Lone Tree Way to Balfour): 4 lane Expwy	
Contra Costa	Rte.4 Bypass (Balfour to Walnut): 2 lane Expwy	
Contra Costa	Rte. 4 BypassSegment 1: Complete IC's at Laurel & Lone Tree	
Contra Costa	Ygnacio Valley/Kirker Pass (Cowell to Clearbrook): widen to 6 lanes	
Contra Costa	Panoramic Dr. Ext. (N. Concord BART to Willow Pass Rd)	
Contra Costa	Commerce Ave. Ext. to Willow Pass Rd.	
Contra Costa	Lone Tree Way (Rte4 Bypass-Fairview): widen to 6 lanes	
Contra Costa	Laurel Rd extension to Rte 4 Bypass (4 lanes)	
Contra Costa	Rte. 24 (Gateway to Brookwood): EB Auxiliary Lane	
Contra Costa	I-80 (Ala. Co. line to Rte.4): HOV3+ widening from 6 to 8 lanes	
Contra Costa	I-80 (Atlas Rd) build new IC with HOV3+ ramp	
Contra Costa	I-80 (Cummings Skyway to Carquinez): WB HOV3+ widening	
Contra Costa	Rte.93-Richmond Bypass: I-580 to Giant Rd 4 lane Expwy.	
Contra Costa	Rte.93-Richmond Bypass: I-580 to Giant Rd 4 lane Expwy. - Giant Rd to I-80 6 lane Expwy	

Contra Costa	Rte.242 (I-680 to Rte.4): widening 4 to 6 lanes	
Contra Costa	Rte.242(Concord IC): SB on-ramp, add NB on hook,aux.to Solano-Grant, widen Concord Ave. 2 to 4 lanes	
Contra Costa	I-580 (I-80 to San Rafael Bridge): convert HOV to mixed flow	
Contra Costa	I-680/Rte 4 fwy-to-fwy direct connectors: EB to SB & NB to WB	
Contra Costa	I-680 (Ala Co. line to Rudgear Rd.): HOV2+ widening 6 to 8 lanes	
Contra Costa	I-680/Rte.24 IC: Widen connectors to 3 lanes (except SB-680 is 4 lanes & EB-24->SB-680 is 2 lanes	
Contra Costa	I-680: Ygnacio Valley to Boyd from 6+ aux. lanes to 10+aux. lanes	
Contra Costa	NB Monument Bld to Rte.242 4-5 to 6 lanes	
Contra Costa	SB Rte.242 to Boyd 4 to 5 lanes	
Contra Costa	SB frontage road with ramps from I-680/Rte. 242 to Monument Ave	
Contra Costa	I-680/Rte. 242 IC: NB connectors 3 lanes	
Contra Costa	SB connectors: I-680 3 lanes, Rte.242 2 lanes	
Contra Costa	I-680 (Rte.242 to Benicia Br.): HOV2+ widening 6 to 8 lanes	
Contra Costa	I-680 (Rte.24 to Benicia Bridge): TOS	
Contra Costa	I-680 (CC. Co. line to Rte. 24): TOS	
Contra Costa	E.Branch Ext. (Bollinger to Camino Tassajara) 4 lanes	
Contra Costa	Windermere Pkwy. 4 (Bollinger Ext. to E. Branch) 4 lanes	
Contra Costa	Dougherty Rd. (Red Willow to CC line): widen to 6 lanes	
Contra Costa	Pacheco (Blum to Arthur): widen to 4 lanes	
Contra Costa	Alhambra (Rte.4 to Macalvey Dr.): widen to 4 lanes	
Contra Costa	San Pablo Av. (Sycamore to Hercules): Signal Coordination	
Contra Costa	TOS (Routes 4, 24, 80, 580, 680)	
Contra Costa	Wilbur Ave. Bridge in Antioch: 2 to 4 lanes	
Contra Costa	Rte.4 East Corridor (Phase II): Buchanan(Harbor to Meadows),	
Contra Costa	I-680 Auxiliary Lane (Diablo to Bollinger Canyon)	
Marin	US-101 (Sir Francis Drake to Bellam): NB auxiliary	
Marin	US-101/Tiburon IC (widen SB off-ramp)	
Marin	TOS: US-101 (SF Co. line to I-580)	
Marin	Second St. (Lindaro to US-101): widen to 4 lanes	
Marin	Atherton Ave. (Olive to Rte. 37): widen 2 to 4 lanes	
Napa	Rte. 12/29 Grade Separation	
Napa	Rte.29 (Redwood/Trancas IC): new full IC	
Napa	Rte. 12/221/29 IC Phase I (easterly junction)	
Napa	Rte. 121 (Maxwell Br.): widen 2 to 4 lanes	
Napa	TOS (Rte. 12, 29)	
Napa	Rte.12 (Rte. 29 to Lynch Rd): upgrade& widen 2 to 3 (EB lane)	3 lanes
San Francisco	US-101 Central Freeway reconstruction SB connector (Fell to Mission)	
San Francisco	I-280 (US-101 to Mariposa): pre-earthquake conditions (No HOV)	
San Francisco	I-280: King/5th St. touchdown substitutes 4th St.ramps	
San Francisco	US-101 (County line to I-280): TOS	
San Francisco	I-280 (County line to US-101): TOS	
San Mateo	Rte. 1 (Rte.1-Half Moon Bay limit): widen 2 to 4 lanes	
San Mateo	Rte. 1 (Fassler to Westport) widening	
San Mateo	Rte. 84 (University to Marsh): widen to 6 lanes expwy.	
San Mateo	Rte. 84 (El Camino Real to Broadway): widen to 6 lanes	



San Mateo	Rte. 92 (Rte.1 to 280): slow veh.lane (Rte.1 to Rte.35 & Rte.35 to I-280)	
San Mateo	Rte.92 (SM-Hayward Bridge appr.): widen to 6 lanes	
San Mateo	Rte. 92 (SM-Wayward bridge): widen to 6 lanes	
San Mateo	US-101/Brittan: new SB -on and -off ramps	
San Mateo	US-101 (San Bruno to Grand Ave.): auxiliary lanes	
San Mateo	US-101 (Rte. 92 to Marsh Rd): auxiliary lanes	
San Mateo	US-101/Old Bayshore Hwy.: new on- off-ramps	
San Mateo	US-101 SFO Improvements (ramps & auxiliaries)	
San Mateo	US-101/Oyster Point IC (Phases 2 and 3)	
San Mateo	US-101/John Daly Blvd. OC widening	
San Mateo	I-280 at Sullivan Ave.: widen SB off-ramp to 2 lanes	
San Mateo	I-280/I-380 local access improvement (San Bruno & Sneath)	
San Mateo	TOS: All Major Freeways	
San Mateo	Brittan Ave. (Old County to Industrial): widen 2 to 4 lanes	
San Mateo	Bloomquist Extension	
San Mateo	Airport Blvd 2 to 4 lane widening (including bridge widening)	
San Mateo	Hickey Blvd. Extension (2 lane Mission to Hillside Blvd)	
Santa Clara	Rte. 17: Lexington IC	
Santa Clara	Rte.17 (Candem to Hamilton): widen 6 to 8 lanes	
Santa Clara	Rte. 17 (Rte 9 to Rte 85): widen to 6 lanes	
Santa Clara	Rte 25 (US-101 to San Benito Co line): Upgrade to Expwy	
Santa Clara	Rte 25/Santa Teresa Blvd/US-101 IC improvements	
Santa Clara	Rte.85 (US-101 to Rte. 237): HOV2+ widening 4 to 6 lanes (no HOV connectors to US-101)	
Santa Clara	Rte.85/Rte.87 IC Completion: add SB85 to NB87 & SB87 to NB85	
Santa Clara	Rte.85/US-101 IC:SB85 to NB101, SB101 to NB85, & mainline conn. (So. San Jose)	
Santa Clara	Rte.87/US-101: ramp connection to Trimble Rd	
Santa Clara	Rte.87 (Julian to US-101): Build 6 lane Fwy(4mixed+2 HOV2+) (no IC with I-880; new IC at Skyport Dr. and Taylor St.)	
Santa Clara	Rte. 87 (Rte. 85 to Julian): HOV lanes	
Santa Clara	US-101 (Monterey Rd to Rte 25): widen to 6 lanes	
Santa Clara	US-101/Rte.85/No. Shoreline IC Improvements (aux.road,loop ramps) (Mountain View)	
Santa Clara	US-101 (Rte. 87 to Trimble/Great America): Auxiliary lane	
Santa Clara	US-101 (Rte 85 to Cochrane): widen to 6 mixed + 2HOV lanes	
Santa Clara	US-101 (SM Co. line to Moffet Blvd): SB Aux. lane	
Santa Clara	US-101 New Bailey IC	
Santa Clara	US-101 (Rte 85 to Cochrane): widen 4 to 6 mixed lanes	
Santa Clara	US-101/10th St(Rte.152): add SB on-ramp	
Santa Clara	US-101/Montague/S. Tomas IC: widen Montague(Mission-101)	
Santa Clara	US-101/Trimble/De La Cruz IC: widen De La Cruz & mod ramp	
Santa Clara	US-101/Tully Rd OC: widen OC 6 to 8 lanes	
Santa Clara	US-101/Tennant Ave: add NB loop on-ramp& widen OC 4 lanes	
Santa Clara	US-101/Buena Vista IC: new IC	

Santa Clara	US-101/Hellyer IC: EB OC 3 lanes	
Santa Clara	US-101/Blossom Hill IC: OC widening	
Santa Clara	Rte.152 (PM 5.4 to 22.1): Truck climbing (WB) & passing lanes	
Santa Clara	Rte.237 (US-101 to Rte.82): upgrade to 4 lane fwy.	
Santa Clara	Rte.237/I/880 IC improvts.: Calaveras WB ext.to McCarthy(+on-ramp)	
Santa Clara	HOV connectors (Improve SB880 to WB237; EB237 HOV flyover to NB880)	
Santa Clara	Rte.237/N.1st St.: build IC	
Santa Clara	Rte. 237 at Middlefield: Upgrade to freeway	
Santa Clara	I-880 (Ala.Co.line-Rte. 237): HOV widening to 10 lanes	
Santa Clara	I-880 (Montague to US-101): widen 4 to 6 lanes	
Santa Clara	I-880/Tasman: build new IC	
Santa Clara	I-880/Dixon Landing Rd. IC improvements (OC widening)	
Santa Clara	I-880/Coleman: widen SB off-ramp & widen OC to 6 lanes	
Santa Clara	I-880/Stevens Creek Blvd IC: delete EB off ramp	
Santa Clara	TOS: US-101 (Lawrence to SM Co. Line)	
Santa Clara	US-101(I-280/680 to I-880): HOV2+ widening 6 to 8 lanes	8 lanes
Santa Clara	Lawree Expwy(I-280 to Rte.237): HOV2+ widening 6 to 8 lanes	8 lanes
Santa Clara	Rte.82 (Lafayette to Scott) widen 4 to 6 lanes	6 lanes
Santa Clara	Rte. 152 Safety improvements (US 101 to Rte 156)	
Santa Clara	Tasman Dr. Ext. across Coyote Creek	
Santa Clara	North McCarthy Extension (Milpitas): Dixon IC to present no. terminus (2 lane arterial)	
Santa Clara	Montague/Trimble Rd Flyover ramp	
Santa Clara	Montague Expwy. (I-680 to US-101): widen 6 to 8 lanes (widening for mixed lanes as HOV already exists)	
Santa Clara	Central Expwy. (Shoreline to US-101):HOV widening to 8 lanes	
Santa Clara	Central Expwy (US-101 to De La Cruz Blvd): add HOV	
Santa Clara	Capitol Expressway HOV 2+ (US-101 to I-680)	
Santa Clara	Butterfield Extension (San Pedro to Watsonville Rd): 6 lanes	
Santa Clara	Existing TOS Routes: Rte. 87, US-101(Rte. 237 to Rte. 85), Rte. 237 WB (I-880 to US-101), I-280 (Santo Tomas Expwy. To Rte. 85), I-880/Rte. 9 to US-101)	
Solano	I-80/Green Valley OC: widen 2 to 4 lanes	
Solano	I-80/American Canyon OC: widen 2 to 4 lanes	
Solano	I-80/W. Texas OC: widen to 6 lanes	
Solano	I-80/Monte Vista OC: widen to 6 lanes	
Solano	TOS: Routes 37, 80, 680, and 780.	
Solano	Rte.37 (Sears Point to Napa River Bridge): eliminate passing lanes	
Solano	Columbus Parkway (I-80 to Blue Rock Springs Park): widen 2 to 4 lanes	
Solano	Broadway (Rte.37 to Mini): widen 2 to 4 lanes	
Solano	Mare Island/Wilson (Florida to Rte.37): widen to 4 lanes	
Solano	Railroad Ave.(North Gate to G St.): widen 6 lanes	
Solano	I-680 Benicia Bridge: new span (5 NB 4 SB lanes)	9 lanes

Solano	Rte.12 (Marina to Scandia): upgrade to 4 lane Expwy.	4 lanes
Solano	Rte.37 (Wilson to Enterprise): upgrade to 4 lane Fwy.	4 lanes
Solano	Rte.113 (SPRR to I-80 in Dixon): widen 2 to 4 lanes	4 lanes
Solano	Broadway (Florida to Mare Island Dr.): widen to 4 lanes	4 lanes
Solano	Rte.12 (PM 7.9): direct connection to Walters Rd.	
Solano	Rte.12 (9.2 mi. east of Suisun to 4 mi. west of Rio Vista): build passing lanes	
Solano	Rte. 37/29 IC (Enterprise to Mini Dr.): upgrade to 4 lane frwy.; new north alignment	
Solano	I-80 (Rte. 29 to CC line): EB HOV3+ on Carquinez Br.	
Solano	I-80 (I-505/Monte Vista to Meridian): widen 7 to 8 lanes (WB currently 4 lanes; EB currently 3 becomes 4 lanes)	
Solano	I-80 at Redwood IC: build new WB on-ramp	
Solano	I-80 at Kidwell Rd.: new IC (NC)	
Solano	I-80 at Alamo Dr.: add new EB off-ramp	
Sonoma	Rte.12 at Stony Point Rd.: fwy. OC. & ramps	
Sonoma	US-101at Rainier: build IC & extend Rainier Ave.	
Sonoma	US-101 Cloverdale bypass: 4 lane fwy.	
Sonoma	US-101 at Arata Ln.: build new IC (diamond with all movements)	
Sonoma	US-101 (Rte.12 to Wilfred): HOV2+ widening 4 to 6 lanes+aux.	
Sonoma	Rte.116 (US-101 to Frates Rd.): widen 2 to 4 lanes	4 lanes
Sonoma	Rte.121 (Napa Rd. to Napa Co. line): channelize & add EB lane	3 lanes
Sonoma	Rte. 128 (Maacom-Napa): widen 2 to 4 lanes	
Sonoma	Stony Point Rd. upgrade (So. 116 to Petaluma Blvd.)	
Sonoma	TOS on Rte.37	
Sonoma	Marlow Rd. widening 2 to 4 lane (Guernville-Piner)	
Sonoma	Commerce Blvd. (Redwood-Golf Course): widen 2 to 4 lanes	

	LOCAL ARTERIAL MODELED PROJECT LIST			
County	Project			
Alameda	Alameda: Atlantic (Main-Webster)			
Alameda	Alameda: Park St (Clement to Encinal)			
Alameda	Alameda: Webster/8th (Buena Vista- Central)			
Alameda	Berkeley: University (Shattuck-I-80)			
Alameda	Berkeley: University (Shattuck-I-80)			
Alameda	Dublin: Dublin Blvd. (Dougherty to San Ramon)			
Alameda	Dublin: San Ramon Rd. (Alcosta to Dublin Blvd.)			
Alameda	Fremont: Paseo Padre (Rte.84 to Fremont Blvd.)			
Alameda	Hayward: Winton Ave. (Soto-Corsair)			
Alameda	Oakland/Hayward:E.14th/Mission (42nd. to Industrial Parkway)			
Alameda	Oakland: 42nd. Ave. (E. 14th St. to Foothill)			
Alameda	Oakland: Broadway (25th St. to Rte. 24 off-ramp)			
Alameda	Oakland: High St./42nd (Courtland-Howard)			
Alameda	Oakland: Lakeshore/Grand (Mandana-Lake Merrit)			
Alameda	Oakland: Telegraph (16th St to 34th St)			
Alameda	Oakland: Telegraph (W. McArthur to Aileen)			
Alameda	Oakland: W. Grand (Mandela to Market)			
Alameda	Pleasanton: Hopyard (I-580 to Santa Rita Rd.)			
Alameda	Pleasanton: Santa Rita (I-580 to Bernal)			
Alameda	Pleasanton: Stoneridge (Foothill to Santa Rita)			
Alameda	Pleasanton: W. Las Positas (Foothill to Santa Rita)			
Alameda	San Leandro: E.14th (Bayfair-Broadmoor)			
Contra Costa	Concord: Kirker/Ygnacio (Myrtle-Cowell)			
Contra Costa	Concord: Port Chicago Hwy. to Ayers Rd.			
Contra Costa	Concord: Willow Pass/Clayton (Market-Sutter)			
Contra Costa	Pleasant Hill: Contra Costa Blvd. (city border to Boyd)			
Contra Costa	Pleasant Hill: Pleasant Hill Rd. (Taylor to Deer Hill Rd.)			
Contra Costa	Pleasant Hill: Taylor Blvd. (Pleasant Hill Rd. to Contra Costa Blvd.)			
Contra Costa	Richmond: 23rd St. (Rheem to Cutting Blvd.)			
Contra Costa	Richmond: Cutting Blvd. (Harbour Way to 49th St)			
Contra Costa	Walnut Creek: Treat Blvd. (I-680 to Bancroft)			
Marin	San Rafael : 4th and 5th (Grand to Ross Valley Rd.)			
Napa	Downtown Napa (1st and 2nd Streets)			
San Francisco	19th/Presidio			
San Francisco	Geary (Laguna/36th)			
San Francisco	North of Market Area (California, Franklin, Gough)			
San Francisco	Van Ness (16th St. to Bay St.)			
San Mateo	Atherton: Middlefield (Marsh-Glenwood)			
San Mateo	Daly City: Geneva (Carrizal-Bayshore)			
San Mateo	Daly City: John Daly Blvd. (Dorchester to Mission)			
San Mateo	East Palo Alto: University (Rte.84 - Woodland)			
San Mateo	Redwood City (Citywide): Rte.84, ECR, Farm Hill, Alameda de las Pulgas, Holly, Marine/Ralston.			
San Mateo	Redwood City/San Carlos: Rte.82 ECR (Oakwood/Dumbarton Ave. to Davey Glenn)			
San Mateo	Redwood City: Rte.82 (Whipple to Rte. 84)			
San Mateo	Redwood City: Rte.84 (US-101 to Rte.82)			
San Mateo	San Mateo: Delaware (Concor-25th)			

	LOCAL ARTERIAL MODELED PROJECT LIST		
County	Project		
Santa Clara	Cupertino: Stevens Creek, De Anza (Bollinger-Rte.85)		
Santa Clara	Gilroy: Monterey Hwy. (First-tenth), Tenth St. (Monterey Hwy.-US101)		
Santa Clara	Los Gatos: Los Gatos Blvd. (Saratoga Blvd.-Rte.85), Blossom Hill		
Santa Clara	Palo Alto: Citywide (Sandhill/Embarcadero, University, Middlefield, Charleston/Embarcadero, San Antonio)		
Santa Clara	Smart 17/880 Corridor (Bascom, San Tomas, No. First, Abel/Main, Calaveras)		
Solano	Vallejo city-wide signal coordination		
Sonoma	Petaluma (Downtown streets): Petaluma Blvd., Lakeville Rd., Washington, McDowell)		

25% SIGNAL TIMING PROJECT LIST	
County	Project
Alameda	I-580 Signal Interconnect (Vasco, East Ave., Sr.84, Livermore, Stanley, First, Santa Rita, Valley Ave, Hopyard Rd., Dougherty Rd., Amador Valley, Dublin Bl., Stoneridge Dr., San Ramon, Foothill Rd., Castro Valley Blvd., Redwood Rd., Center St.)
Alameda	I-880 Smart Corridor (Rte.84 to High: R.92, Winton, Davis, 98th, 66th, San Leandro Blvd.)
Alameda	Milpitas/Warm Springs (Fremont Blvd. to Jacklin)
Alameda	San Pablo Ave. (Grand to Hwy.4)
Alameda	Whipple (Central to I-880) and Industrial (Stratford to Huntwood)
Contra Costa	Leland, Delta Fair, Sommersville (Bailey to Rte. 160)
Contra Costa	Railroad (Bliss-10th), Deer Valley(Lone Tree-Hillcrest),Leland (Southwood-Dover),Lone Tree(Davidson-Vista Grande)
Contra Costa	Rte.4 East Corridor (Phase II): Buchanan(Harbor to Meadows)
Contra Costa	Walnut Creek Traffic Signal Upgrade Phase IV (Mt. Diablo,California, Main, Olympic, Civic, Parkside, So. Broadway)
Marin	San Rafael CBD
Marin	Sir Francis Drake (Eliseo to Larkin)
San Francisco	Market, Mission, Harrison, Bryant, Brannan, Duboce/Division)
San Francisco	Signal Interconnect So. Market (Main, Freemont, 3rd, 4th, 5th, 6th,Market, Mission, Harrison, Bryant, Brannan, Duboce/Division)
San Mateo	3rd-4th streets San Mateo (US-101 to El Camino Real)
San Mateo	El Camino Real ( Peninsula to 27th)
San Mateo	El Camino Real (20th to Ralston)
San Mateo	El Camino Real (Stanford Shop.Center to Ravenswood)
San Mateo	Junipero Serra (San Pedro to Hickey)
San Mateo	Ralston (El Camino Real to Rte. 92)
San Mateo	Sneath Lane (I-280 to Huntington) & Cherr Ave.
Santa Clara	Almaden Rd(Bascom to Leigh)
Santa Clara	Blossom Hill (Leigh to Candem)
Santa Clara	Blossom Hill (Meridian to Almaden)
Santa Clara	Branham (Candem to Meridian)
Santa Clara	Candem (Coleman to Almaden)
Santa Clara	Curtner (Merian to Lincoln)
Santa Clara	Curtner/Tully (Almaden to Capitol Exwy)
Santa Clara	Meridian (Fowworthy to Blossom Hill)
Santa Clara	Monterey Hwy. (Curtner to Bernal)
Santa Clara	Santa Teresa Blvd. (Blossom Hill to Bernal)
Santa Clara	Snell Ave (Capitol Expwy to Blossom Hill)
Santa Clara	White Rd (Alumn Rock to Fowler)
Santa Clara	San Jose Airport SMART Corridor (Delacruz, Coleman, Brokaw)
Santa Clara	Cupertino: Stevens Creek (Stelling-Rte.85), De Anza north (I280-Homestead), De Anza south (Rte.85-Prospect), Homestead (Hollenbeck-TauTau), Wolfe (Stevens Creek-Homestead)
Santa Clara	Stevens Creek/Winchester Blvd.in San Jose: Winchester(Hedding-Payne), Hedding (Winchester-Monroe), Monroe (Newhall-Hedding), Moorpark (Cyprss-Winchester), Stevens Creek Blvd (Kiely-I-880)
Santa Clara	Saratoga city-wide: Saratoge Blvd. (Prospect-Los Gatos Rd.), Prospect Rd. (Saratoga Blvd.-Sunnyvale/Saratoga Rd.), Rte. 9 (Prospect to so.of Saratoge Blvd.), Quito Rd. (Willow to Pollard),Fruitvale Ave. (Saratoga Ave.-Douglas)
Santa Clara	Wolfe Rd (Homestead to Old San Francisco Rd.)
Santa Clara	City of San Jose: Tremble (Montague-US-101)
Santa Clara	City of San Jose: Copley (Montague-I-680)
Santa Clara	City of San Jose: Capitol (Hostetter-Capitol Expwy.)
Santa Clara	City of San Jose: Brokaw/Hostetter (US-101-Capitol Ave)
Santa Clara	City of San Jose: Berryessa (I-680 to US-101)
Santa Clara	City of San Jose: McKee Rd (I-680 to US101)

Santa Clara	City of San Jose: San Antonio (Capitol to King Rd.)
Santa Clara	City of San Jose: McLaughlin (Julian to Tully)
Santa Clara	City of San Jose: Coleman (I-880 to Rte.87)
Santa Clara	City of San Jose: The Alameda/Rte.82 (I-880 to Autum)
Santa Clara	City of San Jose: Park Ave.
Santa Clara	City of San Jose: Taylor (Winchester to Park)
Santa Clara	City of San Jose: Stevens Creek/San Carlos
Santa Clara	City of San Jose: Southwest Expwy. (San Carlos to Bascom)
Santa Clara	City of San Jose: Leigh Ave. (I-280 to Hamilton)
Santa Clara	City of San Jose: Meridian Ave (Southwest Expwy. To Campbell)
Santa Clara	City of San Jose: Winchester (Stevens Creek to Payne)
Santa Clara	City of San Jose: Bollinger (Miller to Lawrence Expwy.)
Santa Clara	City of San Jose: Saratoga Ave. (Stevens Creek to Prospect)
Santa Clara	City of San Jose: Union (Bascom to Los Gatos)
Santa Clara	City of San Jose: Leigh (Dry Creek to Candem)
Santa Clara	City of San Jose: Dry Creek (Bascom to Leigh)
Santa Clara	City of San Jose: Curtner (Bascom to Leigh)
Santa Clara	City of San Jose: Candem(Bascom to Leigh)
Solano	North Texas (Travis to Airbase)

APPENDIX **B**  
ROADWAY AND TRANSIT PROJECTS IN 2001 REGIONAL  
TRANSPORTATION PLAN FOR 2010, 2020, 2025

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Source: *2001 Regional Transportation Plan* – Attachment A



## 2001 REGIONAL TRANSPORTATION PLAN COMMITTED FUNDING

### BAY AREA REGION

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>REGION</i>	
21013	Rehabilitation of Bay Area state-owned toll bridges
21015	Seismic retrofit of Bay Area state-owned toll bridges, excluding San Francisco-Oakland Bay Bridge (see #21778 and #21879 below)
21016	Low Income Flexible Transportation Program (LIFT)
21017	Small Transit Operators - transit operating and capital improvement program (including replacement, rehabilitation and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include system expansion)
<i>GOLDEN GATE</i>	
21012	Golden Gate Bridge seismic retrofit (completes Phases 1 through 3)
21320	Golden Gate Bridge Moveable Median Barrier
<i>EASTSHORE-NORTH</i>	
94540	Carquinez Bridge Replacement: construct new suspension bridge west of existing bridges (four westbound lanes, including an HOV lane, plus new bicycle/pedestrian pathway) and modify Crockett interchange
<i>DIABLO</i>	
94541	New Benicia-Martinez Bridge: construct new bridge span east of existing span (four mixed-flow lanes and one slow-vehicle lane). Includes new toll plaza and upgrades to I-680/I-780 interchange and I-680/Marina Vista Road interchange, and reconstruction of the existing bridge for 4 mixed-flow lanes and bicycle and pedestrian lane.
<i>TRANSBAY BAY BRIDGE</i>	
21878	San Francisco-Oakland Bay Bridge: seismic retrofit of the west span and west approach
21879	San Francisco-Oakland Bay Bridge: east span seismic safety project
<i>TRANSBAY RICHMOND-SAN RAFAEL BRIDGE</i>	
21014	Richmond-San Rafael Bridge deck replacement

*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

**BAY AREA REGION**

*RTP  
Reference  
Number    Project/Program*

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*TRANSBAY SAN MATEO-HAYWARD AND DUMBARTON BRIDGES*

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21601	Dumbarton Bridge: widen Bayfront Expressway (Route 84) from Dumbarton Bridge to US 101/Marsh Road interchange
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94514	I-880/Route 92 interchange improvements in Hayward
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94657	Widen San Mateo-Hayward Bridge: widen low-rise trestle and eastern approach from I-880 from four to six lanes with shoulders (under construction), extend existing westbound HOV lane one mile west along eastern approach from I-880, construct new pedestrian/bicycle overcrossing
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*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

**BAY AREA REGION**

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>REGION</i>	
21001	Freeway Operations Strategies/Transportation Operations Systems (TOS)
21002	Freeway Service Patrol/Freeway Call Boxes
21003	Traffic Engineering Technical Assistance Program (TETAP)/Arterial Signal Re-Timing
21004	Pavement Management Technical Assistance Program (PTAP)
21005	TransLink®
21006	Regional transit information system and transportation marketing
21007	Rideshare Program
21008	TravInfo®
21009	Spare the Air Campaign
21010	Performance monitoring
21011	Transportation for Livable Communities/Housing Incentive Program - Regional Program
21356	Regional Transit Expansion Policy (RTEP) Reserve Funding

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*\* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes.  
(Projects not marked with an asterik (2010) are projects in 2020/25).*

## 2001 REGIONAL TRANSPORTATION PLAN COMMITTED FUNDING

### ALAMEDA COUNTY

*RTP*  
*Reference*  
*Number*   *Project/Program*

<i>ALAMEDA COUNTY-WIDE</i>	
21461	Local transportation improvements (includes streets and roads, transit, bicycle and pedestrian, and other improvements)
21464	Paratransit for AC Transit, BART, non-mandated city programs, service gap coordination
21465	Transit enhancements funded by transit center development Funds
21468	Transit operations - AC Transit, Welfare to Work, Alameda ferries, Altamont Commuter Express (ACE), Union City Transit, Livermore Amador Valley Transit Authority, and countywide express bus
21854	Non-pavement maintenance (sidewalk, lighting, drainage, landscaping, etc.) (committed revenues shown)
21863	Local bridge maintenance (committed revenues shown)
21992	AC Transit bus corridor improvements
94027	Bicycle and pedestrian projects
94522	Local streets and roads pavement maintenance (committed revenues shown)
94525	BART (Alameda County share based on population) - transit operating and capital improvement program (including replacement, rehabilitation and minor enhancements, equipment, fixed facilities and other capital assets; does not include expansion except BART to SFO extension).
94526	AC Transit (Alameda County share based on population) - transit operating and capital improvement program (including replacement, rehabilitation and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include system expansion).
94527	Livermore Amador Valley Transit Authority (LAVTA) - transit operating and capital improvement program (including replacement, rehabilitation and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include system expansion)
94528	Union City Transit - transit operating and capital improvement program (including replacement, rehabilitation and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include system expansion).
98628	BART Advanced Automatic Train Control System (county share)

*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

ALAMEDA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
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*SAN FRANCISCO COUNTY-WIDE*

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21417	Dumbarton Express park-and-ride: 90 spaces on Decota Road near I-880 by the Dumbarton Bridge (includes right-of-way acquisition)
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*EASTSHORE-NORTH*

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21479	Extend Horton Street between 53rd Street and Haruff (under Powell Street Bridge) in Emeryville
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21571	Widen I-80 from 5 lanes to 6 lanes to extend eastbound HOV lane from San Francisco/Oakland Bay Bridge toll plaza to Powell Street
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94008	I-80 bicycle and pedestrian overcrossing in Berkeley
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94021	Extend Mandela Parkway in Oakland; completes freeway congestion reliever route
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98153	Reconstruct MacArthur Boulevard on ramp to restore access to eastbound I-80 and westbound I-580
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98188	San Pablo Avenue Smart Corridor (Phase 2)
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*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

ALAMEDA COUNTY

*RTP  
Reference  
Number    Project/Program*

*TRI-VALLEY*

21100	Vasco Road/I-580 interchange improvements
21347	Rehabilitate and widen Route 84 from I-580 to Scott Street
21455	Widen I-238 from 4 lanes to 6 lanes between I-580 and I-880, includes auxiliary lanes on I-880 south of I-238
21456	I-580 eastbound auxiliary lane between Santa Rita Road to Airway
21457	I-580 interchange improvements at Castro Valley Road, Redwood Road, and Center Street in Castro Valley
21473	Extend North Canyons Parkway westerly to Dublin Boulevard
21474	I-580/North Livermore Avenue interchange improvements
21475	I-580/First Street interchange improvements
21476	Isabel Avenue/Route 84/I-580 interchange improvements: build second bridge to provide 6 lanes over I-580 (Phase 2)
21477	I-580/Greenville Road interchange improvements
21478	Extend Las Positas Road between First Street and Vasco Road
21489	I-580/San Ramon Road/Foothill Road interchange improvements
21490	I-580/Fallon Road/El Charro Road interchange improvements
21492	Extend Scarlett Drive from Dublin Boulevard to Dougherty Road
21493	I-580/I-680 Transportation Operations System (TOS)
21570	Livermore Valley Center Parking Structure
94029	Altamont Commuter Express (ACE) rail service operating and station/track improvements (four roundtrips daily)
94034	Widen Isabel Avenue to four lanes (along future Route 84 alignment) from I-580 south to Vallecitos Road and improvements along Route 84 through Pigeon Pass

*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

**ALAMEDA COUNTY**

*RTP  
Reference  
Number    Project/Program*

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***SUNOL GATEWAY***

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21339	ACE train station track improvements in Alameda County, including parking improvements at downtown Livermore station and Vasco Road station
21437	Regional Express Bus Program: I-680 to Pleasant Hill BART Station
21438	Regional Express Bus Program: Tri-Valley to Sun Microsystems
21458	I-680/I-880 cross connector (study only)
21460	Iron Horse bicycle, pedestrian and transit route
21469	I-680/West Las Positas crossing improvements
21470	I-680/Sunol Boulevard ramp improvements, includes signal improvements and widening under existing structure
21471	I-680/Stoneridge Drive interchange improvements
21472	I-680/Bernal Avenue interchange improvements
94501	I-580/I-680 interchange: construct connector southbound I-680 to eastbound I-580, including new local ramps
98141	I-680 Sunol Grade southbound and northbound HOV lane, ramp metering and auxiliary lane from Route 84 to Route 237 (possible value pricing project)

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**2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING**

**ALAMEDA COUNTY**

*RTP*  
*Reference*  
*Number*   *Project/Program*

<i>EASTSHORE-SOUTH</i>	
21355	Widen East Lewelling Boulevard in San Leandro
21431	Regional Express Bus Program: I-880/Hayward BART Station to Silicon Valley
21451	East 14th Street/Hesperian Boulevard/150th Street channelization improvements
21452	Downtown Oakland streetscape improvements (Broadway, 14th Street and Telegraph Avenue)
21453	Fruitvale BART Station transit village
21454	Hesperian Boulevard/Lewelling Boulevard channelization improvements
21462	Local street improvements in Newark
21463	Local street improvements in Oakland
21466	Washington Avenue/Beatrice Street interchange improvements
21467	New arterial along eastern edge of Westgate Shopping Center between Davis Street and Williams Street
21886	Industrial Parkway upgrade between Whipple Road and improved segment of the parkway in Hayward
94017	Port of Oakland Joint Intermodal Terminal
94020	Seismic retrofit of Webster and Posey tunnels between the cities of Alameda and Oakland, Stage I: seismic retrofit inside tubes (under construction); Stage II: seismic retrofit outside tubes to strengthen surrounding soils
94504	Oakland Airport: construct 4-lane cross-airport roadway (mostly on Port of Oakland property)
94506	Route 84 upgrade to expressway between Route 238 and I-880 in Fremont
94507	Route 238 (Hayward Bypass) 4-lane expressway: I-580 to Harder (Stage 1 only)
94508	Mission Boulevard safety and operational improvements from Industrial Parkway to Route 84
94515	I-580 connections to Hayward Bypass (Route 238) and interchange improvements: northbound Hayward Bypass to northbound I-580 and northbound Hayward Bypass to westbound I-238



**2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING**

**ALAMEDA COUNTY**

*RTP*  
*Reference*  
*Number*   *Project/Program*

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94524	Amtrak Capitol Corridor intercity rail service (9 round trips daily between Oakland and Sacramento and 7 round trips daily between San Jose and Oakland)
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***FREMONT-SOUTH BAY***

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21480	Route 84/Ardenwood Boulevard westbound offramp intersection improvements
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21481	Extend Cushing Parkway between Automall Parkway/Boyce Road to Cushing Parkway/Fremont Boulevard/I-880
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21482	Extend Fremont Boulevard to connect to I-880/Dixon Landing Road
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21483	Widen Stevenson Boulevard from 4 lanes to 6 lanes from I-880 to Blacow Road
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21484	Widen Kato Road from Warren Avenue to Milmont Drive
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21485	Widen Stevenson Boulevard from 2 lanes to 4 lanes from Gallaudet Drive to Mission Boulevard
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21486	Paseo Padre Parkway/Peralta Boulevard (Route 84) intersection improvements
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21487	Widen Mowry Avenue from Mission Boulevard to Peralta Boulevard
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21488	Warren Avenue/Warm Springs Boulevard intersection improvements
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21896	Route 84 vertical and horizontal alignment improvements in Fremont and San Leandro (3 miles to 5.1 miles east of I-680)
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94030	Reconstruct I-880/Route 262 interchange and widen I-880 from Route 262 (Mission Boulevard) to the Santa Clara County line from 8 lanes to 10 lanes (8 mixed-flow and 2 HOV lanes)
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***TRANSBAY SAN MATEO-HAYWARD AND DUMBARTON BRIDGES***

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21433	Regional Express Bus Program: Fremont BART Station to Stanford University
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*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

ALAMEDA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>ALAMEDA COUNTY-WIDE</i>	
21128	Pedestrian maintenance and safety improvements in northern Alameda County
21129*	BART automatic fare collection equipment expansion
21135*	Major corridor enhancements in northern Alameda County
21137*	Bus acquisition for transbay, express, subscription or local service
21141*	Downtown Oakland intermodal transit center, focuses on streetscape improvements on Broadway
21145	Corridor Management Program: signal interconnect, transit priority, SMART corridors, and other improvements
21146	Express bus program (capital costs)
21147	Ferry capital expansion and terminal improvements/relocation
21148	Bicycle and pedestrian overcrossing access improvements in northern Alameda County
94001	Metropolitan Transportation System (MTS) streets and roads pavement rehabilitation shortfall (see Committed projects)
94002	Non-MTS streets and roads pavement rehabilitation shortfall (see Committed projects)
94003	BART capital replacement program shortfall (see Committed projects - excludes seismic program)
94004	AC Transit capital program shortfall (see Committed projects)
98208	Soundwalls
98549	Transportation for Livable Communities - county program
98558	Surface Transportation Program planning funds for the county

*\* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes. (Projects not marked with an asterik (2010) are projects in 2020/25).*

## 2001 REGIONAL TRANSPORTATION PLAN TRACK 1

### ALAMEDA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i><b>EASTSHORE-NORTH</b></i>	
21119*	Extend Mandela Parkway (involves widening existing Yerba Buena Avenue from Horton Street to Hollis Street, and includes channelization and traffic signal improvements)
21134*	Rapid Bus Transit (RBT) in San Pablo Avenue corridor
21142*	Intermodal transit improvements at the Emeryville Amtrak Station (includes parking garage)
21143	I-80/Ashby-Shellmound interchange modifications, involves construction of two roundabouts and a separate bike-pedestrian overcrossing
21144*	I-80/Gilman Avenue interchange improvements (includes roundabouts)
<i><b>DELTA</b></i>	
21139*	Vasco Road safety improvements (Alameda County portion only)
<i><b>TRI-VALLEY</b></i>	
21105*	Isabel Avenue/Route 84/I-580 partial interchange construction (Phase 1)
21113*	Widen Dublin Boulevard from 4 lanes to 6 lanes from Village Parkway to Sierra Court
21116*	Widen I-580 to add an HOV lane in each direction from west of Tassajara Road in Pleasanton to east of Vasco Road in Livermore (initial segment)
21130*	East Dublin/Pleasanton BART Station transit village, includes construction of parking structure
21133*	New West Dublin/Pleasanton BART Station
21151	LAVTA maintenance/operations facility
21885	BART/Tri-Valley Rail Extension (for right-of-way acquisition)
94024	Auto/truck separation lane at I-580/I-205 interchange

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(Projects not marked with an asterik (2010) are projects in 2020/25).

*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

**ALAMEDA COUNTY**

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>SUNOL GATEWAY</i>	
21112*	Crow Canyon safety improvements
98139*	ACE station/track improvements in Alameda County, includes parking improvements at Vasco Road and downtown Livermore stations

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(Projects not marked with an asterik (2010) are projects in 2020/25).*

## 2001 REGIONAL TRANSPORTATION PLAN TRACK 1

### ALAMEDA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<b><i>EASTSHORE-SOUTH</i></b>	
21101*	Extend Tinker Avenue from Main Street to Webster Street/Constitution Way and construct College of Alameda Transit Center
21103*	Construct Central Avenue 4-lane overpass at Union Pacific Railroad (environmental and design phases only)
21107	42nd Avenue/High Street access improvements to I-880 in Oakland, includes widening and realignment of local streets, connector roads, and ramps near interchange
21110*	Route 260 to I-880 connection improvements between Alameda and Oakland
21111*	Capitol Corridor mitigation for track work at Jack London Square
21117*	Realign Langley Street (access point for Oakland International Airport North Field), includes reconstruction of Route 61 (Doolittle Drive) and new traffic signal at Route 61/Langley Street
21118*	MacArthur BART Station intermodal transit village (includes replacement parking)
21120*	Widen Marina Boulevard from Alvarado Boulevard to San Leandro Boulevard
21121*	Widen Thornton Avenue from 2 lanes to 4 lanes between Gateway Boulevard and Hickory Street
21122*	Widen and reconstruct Route 262/ Warren Avenue/ I-880 interchange and East Warren Avenue/UPRR grade separation
21124*	Widen Union City Boulevard from 4 lanes to 6 lanes from Paseo Padre in Fremont to Industrial Parkway in Hayward
21131*	BART-Oakland International Airport connector
21136*	Rapid Bus Transit (RBT) in Oakland/Berkeley/San Leandro corridor (Phase 1)
21138*	San Leandro BART Station transit village (Phase 1); includes parking structure, kiss-and-ride and bus improvements
21140	Westbound I-580 to new Route 238 (Hayward Bypass) connection
21357	Capitol Corridor Phase 1 expansion (for 16 daily round trips)
21495	Joint Intermodal Terminal -Port of Oakland access improvements (Phase 1)

*\* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes. (Projects not marked with an asterik (2010) are projects in 2020/25).*

*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

ALAMEDA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
94032	Route 238 (Hayward Bypass): 4-lane expressway from Harder to Industrial Parkway (Stages 2 and 3)
98207*	I-880/Broadway-Jackson interchange improvements (Phase 1)
<i>FREMONT-SOUTH BAY</i>	
21114*	Rail grade separations at Washington Boulevard/Paseo Padre Parkway at Union Pacific Railroad in Fremont
21123*	Union City Intermodal Station (Phase 2), includes 19 bus bays and a kiss and ride loop road
21125*	Route 84 southbound HOV extension from Newark Boulevard to I-880
21126*	Route 84 southbound HOV onramp from Newark Boulevard to existing Route 84 southbound HOV lane
21132*	BART extension to Warm Springs
94012*	Union City Intermodal Station access improvements (Phase 1); includes extending 11th Street and constructing at-grade parking and pedestrian grade separation
<i>TRANSBAY SAN MATEO-HAYWARD AND DUMBARTON BRIDGES</i>	
21149	Express bus services
21194*	Dumbarton rail bridge rehabilitation (Alameda County share)

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*\* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes. (Projects not marked with an asterik (2010) are projects in 2020/25).*

*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

CONTRA COSTA COUNTY

*RTP  
Reference  
Number    Project/Program*

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*CONTRA COSTA COUNTY-WIDE*

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21855	Non-pavement maintenance (sidewalk, drainage, landscaping, ect. - committed revenues shown)
21864	Local bridge maintenance (committed revenues shown)
94049	Bicycle and pedestrian projects
94553	Local streets and roads pavement maintenance (committed revenues shown)
94556	BART (Contra Costa County share) - transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements, equipment, fixed facilities and other capital assets; does not include expansion except BART to SFO extension)
94557	AC Transit (Contra Costa County) - transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include system expansion).
94558	Central Contra Costa Transit Authority (CCCTA) - transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include system expansion)
94559	WestCAT and Tri Delta - transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include system expansion)
94561	Transit service for elderly and disabled riders
94562	Local street maintenance and improvements; carpools, vanpools, and park and ride lots
98629	BART Advanced Automatic Train Control System (county share)

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*EASTSHORE-NORTH*

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21430	Regional Express Bus Program: I-80/Richmond Transbay
94555	Capitol Corridor intercity rail service (9 round trips daily between Oakland and Sacramento, and 7 round trips daily between San Jose and Oakland)

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**2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING**

**CONTRA COSTA COUNTY**

*RTP*  
*Reference*  
*Number*   *Project/Program*

**DELTA**

21213	Pittsburg/Bay Point BART Station parking & lighting improvements (400 new spaces)
21214	Widen Wilbur Avenue from 2 lanes to 4 lanes from Burlington Northern Santa Fe Railroad to Route 160
21215	Widen Lone Tree Way to 6 lanes from Route 4 Bypass to Fairview Avenue in Brentwood
21216	Extend Laurel Road from Route 4 Bypass to Laurel Road East
21440	Regional Express Bus Program: Brentwood to Pittsburg/Bay Point BART station
21445	Regional Express Bus Program: Route 4/Del Norte BARTstation to Martinez Intermodal Station
94531	Widen Route 4 to 6 mixed flow lanes and 2 HOV lanes from Bailey Road to Railroad Avenue and restripe from Route 242 to Bailey Avenue for HOV lanes
94538	Route 4 transportation management system
96022	Route 4 Bypass, Phase 1: construct a 4-lane facility from Route 4 to Lone Tree Way and a 2-lane facility from Lone Tree Way to Walnut Boulevard, upgrade Marsh Creek Road and construct a partial freeway-to-freeway interchange one mile east of Hillcrest Avenue on Route 4 and partial interchange at Lone Tree Way
98104	Route 4/Railroad Avenue and Loveridge Road interchange improvements and highway widening from Railroad Avenue to Hillcrest Avenue (6 mixed flow lanes and 2 HOV lanes between Railroad Avenue and Loveridge Road)
98115	Widen Ygnacio Valley/Kirker Pass Roads from 4 lanes to 6 lanes from Michigan Boulevard to Cowell Road
98190	Widen Route 4 to a 4-lane expressway from I-80 to Cummings Skyway (Phase 1)
98193	Extend Panoramic Drive from North Concord BART station to Willow Pass Road
98220	Route 4 Bypass, Segment 1: complete interchanges at Laurel Road and Lone Tree Way
98221	Route 4 Bypass, Segment 2: widen to 4 lanes from Lone Tree Way to Balfour Road



*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

CONTRA COSTA COUNTY

*RTP  
Reference  
Number    Project/Program*

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*DIABLO*

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- |       |   |
|-------|---|
| 21434 | Regional Express Bus Program: I-680/Martinez to San Ramon   |
| 94054 | Martinez Intermodal Terminal Facility (Phases 1 and 2); includes construction of a new passenger rail station, bus facilities and parking |
| 94532 | Gateway Lamorinda traffic program   |
| 98127 | I-680/Alcosta Boulevard interchange improvements  |
| 98132 | Widen and extend Bollinger Canyon Road (6 lanes) from Alcosta Boulevard to Dougherty Road   |
| 98134 | Widen Dougherty Road to 6 lanes from Red Willow to Contra Costa County line   |
| 98135 | Construct Windermere Parkway: 4 lanes from Bollinger Canyon Road extension to East Branch   |
| 98136 | Construct East Branch: 4 lanes from Bollinger Canyon Road extension to Camino Tassajara   |

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*TRANSBAY RICHMOND-SAN RAFAEL BRIDGE*

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| 21432 | Regional Express Bus Program: I-80/Richmond Transbay |
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*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

CONTRA COSTA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>CONTRA COSTA COUNTY-WIDE</i>	
21201	BART system operations and capacity improvements (Eastshore-North, Diablo and Delta corridors)
21202	Bicycle and pedestrian projects
21203*	Express bus acquisition for commuter bus service
21204	Ancillary park and ride, transit access, express bus enhancements - capital facilities
94036	Metropolitan Transportation System (MTS) streets and roads pavement rehabilitation shortfall (see Committed projects)
94037	Non-MTS streets and roads pavement rehabilitation shortfall (see Committed projects)
94038	AC Transit capital program shortfall (see Committed projects)
94040	BART capital program shortfall (see Committed projects - excludes seismic program)
98550	Transportation for Livable Communities - county program
98559	Surface Transportation Program (STP) planning funds for the county

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*\* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes.  
(Projects not marked with an asterik (2010) are projects in 2020/25).*

## 2001 REGIONAL TRANSPORTATION PLAN TRACK 1

### CONTRA COSTA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i><b>EASTSHORE-NORTH</b></i>	
21208*	Richmond Parkway Transit Center (Phase 1): includes signal reconfiguration/timing, new 700-800 space parking facility, and security improvements at Hilltop park-and-ride lot
21209*	Hercules Transit Center relocation and expansion
21210*	Capitol Corridor train station in Hercules
94045*	New express buses for I-80 HOV service (capital costs)
94047	Extend I-80 westbound HOV lane from north of Cummings Skyway to State Route 4
94048	Non-capacity increasing improvements to interchanges and parallel arterials to I-80
98157*	AC Transit enhanced bus service in San Pablo Avenue corridor in Contra Costa County: new passenger stations, roadway geometric improvements, information kiosks
98197*	Richmond intermodal transfer station (BART to Amtrak/Capitol Corridor)
<i><b>DELTA</b></i>	
21211	BART/East Contra Costa Rail Extension (right-of-way acquisition)
21212*	Widen eastbound Hillcrest Avenue offramp from 1 lane to 2 lanes and add a Route 4 eastbound auxiliary lane in Antioch
94046	Non-capacity increasing improvements to interchanges and parallel arterials to Route 4
94050	Upgrade Route 4 to full freeway from I-80 to Cummings Skyway (Phase 2)
98142*	Widen Route 4 from 4 lanes to 8 lanes from Loveridge Road to Somersville Road with HOV lanes
98198*	Vasco Road safety improvements (includes Alameda County portion)
98222	Route 4 Bypass, Segment 1: Route 160 freeway-to-freeway connectors to and from the north
98999*	Widen Route 4 from 4 lanes to 6 lanes from Somersville Road to Route 160 with reversible HOV lane in median (interim project)

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*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

CONTRA COSTA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>DIABLO</i>	
21205*	I-680/Route 4 interchange freeway-to-freeway direct connectors (Phases 1 and 2): eastbound Route 4 to southbound I-680, and northbound I- 680 to westbound Route 4
21206	Caldecott Tunnel fourth bore
21207*	Martinez Intermodal Terminal Facility (Phase 3 initial segment): 200 interim parking spaces (includes site acquisition, demolition and construction)
94051*	I-680 auxiliary lane from Bollinger Canyon Road to Diablo Road in San Ramon and Danville
94052*	I-680 HOV lanes from Marina Vista interchange to North Main Street (southbound) and from SR 242 northbound to the Marina Vista interchange
98126	Non-capacity increasing improvements to interchanges and parallel arterials to I-680 and Route 24
98130*	Widen Alhambra Avenue from Route 4 to McAlvey Drive (Phases 2 and 3)
98133*	Widen Pacheco Boulevard from 2 lanes to 4 lanes from Blum Road to Arthur Road
98194*	Extend Commerce Avenue to Willow Pass Road
98196*	Route 24 eastbound auxiliary lanes from Gateway Boulevard to Brookwood Road/Moraga Way in Orinda

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*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

MARIN COUNTY

*RTP  
Reference  
Number    Project/Program*

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*MARIN COUNTY-WIDE*

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21856	Non-pavement maintenance (sidewalk, lighting, drainage, landscaping, ect. - committed revenues shown)
21865	Local bridge maintenance (committed revenues shown)
94063	Bicycle and pedestrian projects
94572	Golden Gate Transit (Marin County share) - Transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include expansion)
98511	Local streets and roads pavement maintenance (committed revenues shown)

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*GOLDEN GATE*

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21887	Tennessee Valley (Coyote Creek) Bridge replacement
21888	Redwood landfill overcrossing
21889	Regional Express Bus Program: US 101/Santa Rosa to San Rafael/San Francisco
94563	US 101 HOV lanes from North San Pedro Road to Lucky Drive in San Rafael
94566	US 101/Lucas Valley Road interchange improvements in San Rafael
98182	Sir Francis Drake Boulevard improvements
98200	Sonoma-Marin Rail station site acquisitions/upgrades

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*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

MARIN COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>MARIN COUNTY-WIDE</i>	
21301	Golden Gate Transit capital program shortfall (see Committed projects)
21302	Bicycle and pedestrian projects (from Countywide Master Plan)
21322	Travel Demand Management Program
94055	Metropolitan Transportation System (MTS) streets and roads pavement rehabilitation shortfall (see Committed projects)
94056	Non-MTS streets and roads pavement rehabilitation shortfall (see Committed projects)
98504	Local streets and roads non-pavement maintenance shortfall (see Committed projects)
98525	Seismic retrofit and upgrade of local bridges and overpasses shortfall
98551	Transportation for Livable Communities - county program
98560	Surface Transportation Program planning funds for the county

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*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

MARIN COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>GOLDEN GATE</i>	
21303	Local Marin bus service enhancements (capital only)
21304*	Freeway-to-freeway interchange improvements; includes new bridge West I-580 to South US 101 and new lane West I-580 to North US 101 to 2nd Avenue (design phase only)
21305*	US 101/Tamalpais interchange improvements
21306*	US 101/Lucas Valley Road interchange improvements
21307*	US 101/Atherton interchange improvements: signalize Atherton Avenue/Binford Road intersection
21308*	Expand Manzanita park-and-ride lot
98154	Widen US 101 from 4 lanes to 6 lanes (including 2 HOV lanes) from Route 37 to the Sonoma County line and convert some portions from expressway to freeway
98178*	US 101/Sir Francis Drake Boulevard improvements (environmental study only)
98179*	US 101/Tiburon Boulevard interchange improvements: widen southbound offramp
<i>NORTH BAY EAST-WEST</i>	
98146	Route 37 traveler information system

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*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

**NAPA COUNTY**

*RTP  
Reference  
Number    Project/Program*

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***NAPA COUNTY-WIDE***

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21857	Non-pavement maintenance (sidewalk, lighting, drainage, landscaping, etc. - committed revenues shown)
21871	Local bridge maintenance (committed revenues shown)
94067	Traffic Operations System improvements in Napa Valley
94077	Bicycle and pedestrian projects
94576	Local streets and roads pavement maintenance (committed revenues shown)
94578	Napa County Transit - transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include system expansion)

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***NAPA VALLEY***

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21419	Ancillary park and ride, intermodal facilities, transit access, express bus enhancements -- capital facilities
94070	Transit Service Center in the city of Napa and operational improvements for existing transit programs
94071	Replace Napa River (Maxwell) Bridge and widen from 2 lanes to 4 lanes on Route 121 over the Napa River in the city of Napa
94076	Trancas intermodal facility in the city of Napa
94575	Route 29: Redwood/Trancas Road interchange construction

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*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

NAPA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>NAPA COUNTY-WIDE</i>	
94064	Metropolitan Transportation System (MTS) streets and roads pavement rehabilitation shortfall (see Committed projects)
94065	Non-MTS streets and roads pavement rehabilitation shortfall (see Committed projects)
98552	Transportation for Livable Communities - county program
98561	Surface Transportation Program planning funds for the county
<i>NORTH BAY EAST-WEST</i>	
21401	Route 29/12/121 (Stanly Ranch) intersection improvements
94073*	Route 12/29/221 (Soscol Avenue) intersection improvements
94074	Widen Route 12 (Jamieson Canyon) from I-80 in Solano County to Route 29 in Napa County from 2 lanes to 4 lanes (Napa County portion of project)
94075*	Route 12/29 (Airport Road) grade separation
<i>NAPA VALLEY</i>	
21402	Napa-to-Fairfield fixed-route transit (capital costs)
21403	Non-capacity increasing operational improvements to MTS and non-MTS streets and roads network in Napa Valley
94072	Widen First Street overcrossing on Route 29 from 2 lanes to 4 lanes in the city of Napa

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*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

SAN FRANCISCO COUNTY

*RTP  
Reference  
Number    Project/Program*

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*SAN FRANCISCO COUNTY-WIDE*

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21350	Remove US 101 Central Freeway structure
21858	Non-pavement maintenance (sidewalk, lighting, drainage, landscaping, etc. - committed revenues shown)
21866	Local bridge maintenance (committed revenues shown)
94090	Bicycle and pedestrian projects
94621	US 101 Central Freeway reconstruction due to earthquake damage
94623	Street resurfacing and reconstruction
94624	Traffic signals and signs
94625	Bernal Heights Street system upgrade
94627	Local streets and roads pavement maintenance (committed revenues shown - includes sales tax revenues from San Francisco County project #94623)
94632	Third Street light rail transit extension to Bayview Hunters Point (initial operating segment)
94635	BART (San Francisco County share) - transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements, equipment, fixed facilities and other capital assets; does not include expansion except BART to SFO extension)
94636	San Francisco Municipal Railway - transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include system expansion)
94637	Expansion of paratransit door-to-door van and taxi service to comply with Americans With Disabilities Act (ADA)
94639	Ridesharing and transit promotion
98593	Integrated Traffic Management System
98630	BART Advanced Automatic Train Control System (county share)

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*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

SAN FRANCISCO COUNTY

*RTP  
Reference  
Number    Project/Program*

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*GOLDEN GATE*

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|-------|---|
| 21353 | Golden Gate Transit (San Francisco County share) -transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include expansion) |
| <hr/> |   |
| 21549 | South Basin Bridge (environmental study only)   |
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| 21890 | Regional Express Bus Program: US 101/Santa Rosa to San Rafael/San Francisco   |
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| 98102 | Doyle Drive environmental study   |
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*PENINSULA*

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|-------|---|
| 21537 | Caltrain Express service between San Francisco and San Jose, includes passing tracks and rolling stock (Phase 1) (San Francisco County portion)   |
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| 94634 | Caltrain (San Francisco County share) transit operating and capital improvement program (including replacement, rehabilitation, and system enhancements for rolling stock, equipment, fixed facilities and other capital assets). Station Improvements (e.g. platforms) are included. |
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*SAN FRANCISCO*

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|-------|------------------------------|
| 21573 | Muni F-Embarcadero extension |
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*TRANSBAY BAY BRIDGE*

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| 21422 | Design and engineering studyfor Treasure Island ferry terminal |
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*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

SAN FRANCISCO COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>SAN FRANCISCO COUNTY-WIDE</i>	
21505	Local bridge seismic work
21548	Non-MTS streets and roads pavement rehabilitation shortfall
94078	Metropolitan Transportation System (MTS) streets and roads pavement rehabilitation shortfall (see Committed projects)
94079	BART capital replacement program shortfall (see Committed projects - excludes seismic program)
94080	Muni capital replacement program shortfall (see Committed projects)
98553	Transportation for Livable Communities - county program
98562	Surface Transportation Program planning funds for the county
<i>GOLDEN GATE</i>	
21354	Golden Gate Transit (San Francisco County share) capital replacement program shortfall (see Committed projects)
94089*	Doyle Drive replacement - US 101 south of the Golden Gate Bridge
<i>PENINSULA</i>	
21342	Caltrain Downtown Extension/TransBay Terminal Replacement
21509*	Caltrain electrification from San Francisco to Gilroy
94085	Caltrain capital replacement program shortfall (San Francisco County share)

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*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

SAN FRANCISCO COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>SAN FRANCISCO</i>	
21501	Bicycle projects and programs
21502	Pedestrian projects and programs
21503	Traffic calming
21504	Traffic signals and signs
21506*	Integrated Traffic Management System
21507	Transit enhancements
21508	Bus Rapid Transit Program
21510*	Third Street Light Rail Transit extension to Chinatown (Central Subway)
21544*	Balboa Park BART Station expansion (planning phase only)

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*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

SAN MATEO COUNTY

*RTP  
Reference  
Number    Project/Program*

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*SAN MATEO COUNTY-WIDE*

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21859	Non-pavement maintenance (sidewalk, lighting, drainage, landscaping, etc. - committed revenues shown)
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21867	Local bridge maintenance (committed revenues shown)
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94101	Bicycle and pedestrian projects
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94662	Local streets and roads pavement maintenance (committed revenues shown)
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94666	SamTrans - transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets. Does not include system expansion).
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94667	SamTrans Americans With Disabilities (ADA) services
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98631	BART Advanced Automatic Train Control System (county share)
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# *2001 REGIONAL TRANSPORTATION PLAN COMMITTED FUNDING*

SAN MATEO COUNTY

*RTP  
Reference  
Number    Project/Program*

<i>PENINSULA</i>	
21336	Widen Airport Boulevard from 2 lanes to 4 lanes
21337	Widen Airport Boulevard bridge (14 feet widening of existing bridge structure)
21340	Extend Hickey Boulevard to construct 2-lane road between Mission Road and Hillside Boulevard in Colma
21349	US 101 interchange improvements and ramp metering at Ralston Avenue, Hillside Boulevard, and Millbrae Avenue
21351	Widen John Daly overcrossing at junction I-280 and Route 1
21352	Replace San Pedro Creek bridge and roadway approaches
21439	Regional Express Bus Program: Route 82/El Camino Express, Daly City BART Station to Palo Alto
21574	San Mateo Downtown Transit Center
21605	US 101/Oyster Point Boulevard interchange improvements (Phases 2 and 3)
21609	I-280/I-380 local access improvements
21617	Caltrain Express service between San Francisco and San Jose; includes passing tracks and rolling stock (Phase 1)
21622	Caltrain local station improvements
21626	Caltrain grade separations (to be determined)
21876	BART (San Mateo County share) - transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements, equipment, fixed facilities and other capital assets; does not include expansion except BART to SFO extension).
21892	Widen Route 84 from 4 lanes to 6 lanes from El Camino Real to Broadway
21893	Route 92 between Half Moon Bay city limits and Pilarcitos Creek alignment and shoulder improvements
21897	Modify and interconnect existing traffic signals from Davey Glen Road to 42st Avenue and 31st to Millbrae
94100	US 101 auxiliary lanes from Marsh Road to Route 92
94105	BART to San Francisco International Airport (SFO) extension

*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

SAN MATEO COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
94643	Widen Route 92 between Route 1 and Half Moon Bay city limits
94644	Route 92 westbound slow vehicle lane between Route 35 and I-280
94656	Upgrade Route 1 (Devil's Slide Tunnel)
94664	Caltrain (San Mateo County share) transit operating and capital improvement program (including replacement, rehabilitation, and system enhancements for rolling stock, equipment, fixed facilities and other capital assets). Station Improvements (e.g. platforms) are also included.
98204	Construct Route 1 northbound and southbound lanes from Fassler Avenue to Westport Drive in Pacifica



*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

SAN MATEO COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>SAN MATEO COUNTY-WIDE</i>	
21624	Transit-Oriented Development Incentives Program
94093	Metropolitan Transportation System (MTS) streets and roads pavement rehabilitation shortfall (see Committed projects)
98501	Non-MTS streets and roads pavement rehabilitation shortfall
98554	Transportation for Livable Communities - county program
98563	Surface Transportation Program planning funds for the county
<i>PENINSULA</i>	
21343	Caltrain Downtown Extension/Transbay Terminal Replacement
21602*	US 101/Broadway interchange reconstruction
21603*	US 101/Woodside Road interchange improvements
21604	US 101 auxiliary lanes from Sierra Point to San Francisco County line
21606*	US 101/ Willow Road interchange reconstruction
21607*	US 101/University Avenue interchange reconstruction
21608*	US 101 auxiliary lanes from Marsh Road to Santa Clara County line
21610*	US 101 auxiliary lanes from San Bruno Avenue to Grand Avenue
21627*	Caltrain electrification from San Francisco to Gilroy
21632	Route 92 from US 101 to I-280: add westbound passing lane
98176*	US 101 auxiliary lanes from 3rd Avenue to Millbrae and US 101/Peninsula Avenue interchange reconstruction
98567	BART capital program shortfall - see Committed projects (excludes seismic program)
98568	Caltrain capital replacement program shortfall (San Mateo County share) - see Committed projects

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*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

SAN MATEO COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>TRANSBAY SAN MATEO-HAYWARD AND DUMBARTON BRIDGES</i>	
21618*	Dumbarton rail bridge rehabilitation (San Mateo County share)

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*\* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes.  
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*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

SANTA CLARA COUNTY

*RTP  
Reference  
Number    Project/Program*

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*SANTA CLARA COUNTY-WIDE*

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|-------|---|
| 21860 | Non-pavement maintenance (sidewalk, lighting, drainage, landscaping, etc. - committed revenues shown)   |
| 21868 | Local bridge maintenance  |
| 94109 | Traffic Operations System (TOS) improvements on Route 237 and I-880   |
| 94125 | Bicycle and pedestrian projects   |
| 94609 | Local streets and roads pavement maintenance (committed revenues shown)   |
| 94610 | VTA - transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets. Does not include system expansion). |

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*SUNOL GATEWAY*

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| 98140 | I-680 Sunol Grade southbound and northbound HOV lanes, ramp metering and auxiliary lane from Route 84 to Route 237 (possible value pricing project) |
| 98151 | Planning study and preliminary engineering for connector between I-880 and I-680  |

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*FREMONT-SOUTH BAY*

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|-------|--|
| 21444 | Regional Express Bus Program: I-680/Fremont BART Station to Silicon Valley   |
| 94134 | I-880/Route 237 interchange improvements; includes southbound I-880 to westbound Route 237 and eastbound Route 237 to northbound I-880 (Stages A&B)  |
| 96017 | Widen I-880 from 4 lanes to 6 lanes from Montague Expressway to US 101   |
| 98138 | Acquisition of railroad corridor for future Silicon Valley Rapid Transit Corridor project  |
| 98172 | I-880/Route 237 interchange improvements (freeway-to-freeway HOV connector) and eastbound Route 237 to southbound I-880 ramp to Tasman Drive         |
| 98209 | Reconstruct I-880/Dixon Landing Road interchange and widen I-880 from 8 to 10 lanes (includes 2 HOV lanes) from Route 237 to the Alameda County line |
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# *2001 REGIONAL TRANSPORTATION PLAN COMMITTED FUNDING*

SANTA CLARA COUNTY

*RTP  
Reference  
Number    Project/Program*

## *SILICON VALLEY*

20001	US 101/Bailey Avenue interchange improvements
20002	Route 85 noise mitigation
21421	Expand Guadalupe lightrail vehicle maintenance facility
21721	Tenth Street (Route 152)/US 101 interchange improvements in Gilroy
21729	Mary Avenue bicycle and pedestrian overcrossing at I-280
21730	Los Gatos Creek Trail from Lincoln Avenue to San Fernando Street
21731	Los Gatos Creek Trail from San Fernando Street to Santa Clara Street
21732	Stevens Creek Trail, Reach 4 North (Yuba Drive to El Camino Real Underpass to North Meadow)
21733	Uvas Creek Class 1 Trail connection to Gilroy Sports Park (Phases 1 and 2 from Thomas Road Bridge to Gilroy Sports Park)
21734	Extend Los Gatos Creek Trail on east side from Mozart Avenue to San Tomas Expressway
21735	San Tomas Aquino/Saratoga Creek Trail from Route 237 to Santa Clara south city limit
21736	San Tomas Aquino/Saratoga Creek Trail from Tantau to Barnhart
21737	Borregas Avenue bicycle and pedestrian overcrossings at US 101 and Route 237
21738	West Little Llagas Creek bicycle and pedestrian pathway from Spring Road to Watsonville Road
21739	Union Pacific bicycle and pedestrian overcrossing from Gibraltar Court to Montague Expressway
21740	Bernardo Avenue undercrossing at Caltrain railroad tracks
21741	Bike and pedestrian improvements on Hamilton Avenue from Salmar to Creekside (Route 17)
21742	River Oaks Parkway bike and pedestrian bridge at Guadalupe River
21743	Bicycle improvements on Almaden Expressway between Ironwood Drive and Koch Lane (southbound only)

## 2001 REGIONAL TRANSPORTATION PLAN COMMITTED FUNDING

SANTA CLARA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
21744	Santa Clara Caltrain bike and pedestrian overcrossing for Intermodal Transit Center
21745	De Anza Trail
21746	Cox Avenue/Southern Pacific railroad intersection improvements; includes improvements to grade crossings and bicycle paths
21747	California Avenue bicycle and pedestrian undercrossing at Caltrain station
21756	Widen US 101 from 6 lanes to 8 lanes (HOV lanes) from Metcalf Road to Cochrane Road
21760	Double track Caltrain between San Jose and Gilroy
21770	Caltrain extension to Salinas/Monterey (capital funds)
21785	US 101/Blossom Hill Avenue interchange modifications
21786	US 101/Hellyer Avenue interchange modifications
21787	Palo Alto Intermodal Transit Center (Phase I)
21788	Zero emission vehicles and facilities for VTA bus fleet
21790	Altamont Commuter Express Upgrade
21791	Downtown to East Valley Light-rail and Bus Rapid Transit, Phases 1 and 2
21794	Bus Rapid Transit corridor: El Camino Real (Line 22)
21797	Route 17 bus service improvements
21830	Expressway signal synchronization program
21831	Montague Expressway level-of-service improvements: US 101 to De la Cruz Boulevard HOV lanes
21832	Central Expressway level-of-service improvements: Bowers Avenue to De la Cruz Boulevard
21833	Almaden Expressway level-of-service improvements: Blossom Hill Road to Branham Lane
21834	San Tomas Expressway level-of-service improvements at Campbell Avenue
21836	San Tomas Expressway level-of-service improvements at Hamilton Avenue
21837	Capitol Expressway level-of-service improvements at McLaughlin Avenue

## 2001 REGIONAL TRANSPORTATION PLAN COMMITTED FUNDING

SANTA CLARA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
21838	Foothill Expressway level-of-service improvements at various locations
21922	San Jose International Airport connections to Guadalupe LRT
21923	Bus Rapid Transit corridor: Stevens Creek Boulevard
21924	Extend Vasona LRT from Winchester to Vasona Junction in Los Gatos
94112	Smart Corridor signal synchronization program; includes extending system north and south
94117	Transit centers and park-and-ride lots
94124	Route 87 HOV lanes from Julian Street to I-280 and from I-280 to Route 85
94135	Study to re-align Route 152 from Route 156 to US 101 (Santa Clara County portion)
94137	Widen US 101 from 4 lanes to 6 lanes from Metcalf Road in South San Jose to Cochrane Road in Morgan Hill
94587	Widen Guadalupe Expressway (Route 87) from 4-lane expressway to 6-lane freeway, including 2 HOV lanes from US 101 to Julian Street in downtown San Jose
94589	Complete Routes 85/87 interchange and connector ramps in San Jose
94592	Route 85/US 101 interchange improvements in Mountain View, includes northbound and southbound HOV direct connector ramps
94617	Capitol Corridor intercity rail service (9 round trips daily between Oakland and Sacramento and 7 round trips daily between San Jose and Oakland)
96002	Route 152 safety improvements from Uvas Creek to Route 156 near Gilroy
96019	Tasman Corridor East light rail extension from North First Street to Hostetter Road
98103	Route 17 improvements between Campbell and Los Gatos
98118	Capitol Corridor light rail extension along Capitol Avenue from just south of Hostetter Road to Wilbur Avenue north of Capitol Expressway
98119	Vasona Corridor light rail extension from downtown San Jose to Winchester Boulevard in Campbell
98121	Increase Caltrain service from San Jose to Gilroy, includes Caltrain corridor facilities and service improvements

*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

SANTA CLARA COUNTY

*RTP  
Reference  
Number    Project/Program*

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98171	Complete Route 85 and US 101 interchange and connector ramps in South San Jose and widen US 101 to 8 lanes from Bernal Road to Metcalf Road
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98201	100 low-floor light rail vehicles: 50 new vehicles and 50 replacement vehicles
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98849	Route 152 safety and operational improvements between US 101 and Ferguson Road
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***PENINSULA***

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21762	Caltrain Express service between San Francisco and San Jose, includes passing tracks and rolling stock (Phase 1) (Santa Clara County portion)
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21768	Caltrain local station improvements
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94613	Caltrain (Santa Clara County portion) transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include system expansion).
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*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

SANTA CLARA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>SANTA CLARA COUNTY-WIDE</i>	
21748	Santa Clara Countywide Bicycle Program (Tier 2 and beyond)
21750	VTa Landscape Restoration and Graffiti Removal Program
21754	VTa Soundwall Program
21755	VTa Transportation Systems Operations and Management Program
94106	Metropolitan Transportation System (MTS) streets and roads pavement rehabilitation shortfall (see Committed projects)
94107	Non-MTS streets and roads pavement rehabilitation shortfall and local streets and roads projects
98508	Local streets and roads non-pavement maintenance shortfall
98555	Transportation for Livable Communities - county program
98564	Surface Transportation Program (STP) planning funds for the county
<i>FREMONT-SOUTH BAY</i>	
21713	Route 237 westbound auxiliary lanes between Coyote Creek Bridge and North First Street
21921*	BART Extension from Warm Springs to San Jose

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*\* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes. (Projects not marked with an asterik (2010) are projects in 2020/25).*



# 2001 REGIONAL TRANSPORTATION PLAN TRACK 1

## SANTA CLARA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>SILICON VALLEY</i>	
21702*	US 101/Buena Vista Avenue interchange construction
21703*	I-880/Coleman Avenue interchange improvements
21706	US 101/Fourth Street/Zanker Road overcrossing and ramp modifications
21707	I-280/I-680 connector to southbound US 101: new grade-separated ramp with Tully Road exit ramp
21708	Grade-separate Route 85 northbound to I-280 northbound and I-280 exit to Foothill Expressway ramps
21712*	Montague Expressway/San Tomas Expressway/US 101/Mission College Boulevard interchange improvements
21714*	Route 25/Santa Teresa Boulevard/US 101 interchange construction
21715*	Additional Route 152 safety improvements between US 101 and Route 156 (may include a westbound Route 152 to westbound Route 156 flyover)
21716	Widen Route 237 for HOV lanes between Route 85 and US 101
21717*	Upgrade Route 25 to 4-lane expressway standards (Santa Clara County portion of project)
21718	Widen Route 85 from I-280 to Fremont Avenue
21719*	I-880/Stevens Creek Boulevard interchange improvements
21720*	US 101/Tennant Avenue interchange improvements in Morgan Hill
21722*	Trimble Road/De La Cruz Boulevard/Central Expressway/US 101 interchange improvements
21723*	US 101/Tully Road interchange modifications
21724	Add US 101 auxiliary lane from Route 87 to Montague Expressway
21727*	Route 87/US 101 ramp connection to Trimble Road interchange
21749*	Construct Butterfield Boulevard from San Pedro Road to Watsonville Road
21753	Extend Mary Avenue from Almanor Avenue to H Street, including Route 237/US 101 overcrossing in Sunnyvale

\* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes.  
(Projects not marked with an asterisk (2010) are projects in 2020/25).

*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

SANTA CLARA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
21840*	San Jose-Santa Clara fourth main track and station upgrades (Phase I)
98175*	Widen Montague Expressway from 6 lanes to 8 lanes (adds two mixed flow lanes) from I-680 to US 101
98210*	Widen Central Expressway from 6 lanes to 8 lanes (adds two HOV lanes) between Route 237 and De La Cruz Avenue
98866*	Montague Expressway/Trimble flyover ramp: westbound Montague Expressway to westbound Trimble Road
<i>PENINSULA</i>	
21344	Caltrain Downtown Extension/Transbay Terminal Replacement
21769*	Caltrain electrification from San Francisco to Gilroy
21877	Caltrain capital replacement program shortfall (Santa Clara County share) - see Committed projects
<i>TRANSBAY SAN MATEO-HAYWARD AND DUMBARTON BRIDGES</i>	
21792*	Dumbarton rail bridge rehabilitation (Santa Clara County share)

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*\* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes. (Projects not marked with an asterik (2010) are projects in 2020/25).*

**2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING**

**SOLANO COUNTY**

*RTP  
Reference  
Number    Project/Program*

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***SOLANO COUNTY-WIDE***

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- |       |   |
|-------|---|
| 21861 | Non-pavement maintenance (sidewalk, lighting, drainage, landscaping, etc. - committed revenues shown)   |
| 21869 | Local bridge maintenance (committed revenues shown)   |
| 94154 | Bicycle and pedestrian projects   |
| 94681 | Local streets and roads pavement maintenance (committed revenues shown)   |
| 94683 | Vallejo Transit - transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include system expansion). |

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***NORTH BAY EAST-WEST***

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|-------|--|
| 94149 | Route 29/Route 37 interchange improvements in Vallejo  |
| 94675 | Route 37 from Napa River Bridge to Route 29: upgrade from 2-lane expressway to 4-lane freeway (not including Routes 29/37 interchange), planting, and environmental mitigation |
| 98217 | Route 12 safety improvements between Suisun City and Rio Vista (reduce bumps and dips in the roadway and extend passing lanes)   |

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***EASTSHORE-NORTH***

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|-------|---|
| 21341 | Project development for new Fairfield/Vacaville multi-modal rail station for Capitol Corridor intercity rail service in Solano County                   |
| 21348 | Install a second span along existing Green Valley Bridge to facilitate four lanes of travel way and an acceleration/deceleration lane in each direction |
| 21441 | Regional Express Bus Program: Vallejo/Transbay  |
| 21442 | Regional Express Bus Program: I-80/Solano County to Del Norte BART Station  |
| 21575 | Vallejo Baylink Ferry (capital cost for new passenger vessel)   |
| 94679 | Transit centers and park-and-ride lots  |
| 94682 | Capitol Corridor intercity rail service (9 round trips daily between Oakland and Sacramento and 7 round trips daily between San Jose and Oakland)       |
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*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

SOLANO COUNTY

*RTP  
Reference  
Number    Project/Program*

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*DIABLO*

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21435	Regional Express Bus Program: I-80 and I-680/Solano County to Walnut Creek BART Station
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21443	Regional Express Bus Program: I-680 and I-780/Solano County to Walnut Creek BART Station
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94150	I-80/I-680/Route 12 interchange improvements; includes connectors and auxiliary lanes between Green Valley Road and Cordelia truck weigh station (Phase 1)

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*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

SOLANO COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>SOLANO COUNTY-WIDE</i>	
21801	Vallejo Transit capital replacement program shortfall (see Committed projects)
21809	Match for improvements to local interchanges and arterials
94138	Metropolitan Transportation System (MTS) streets and roads pavement rehabilitation shortfall (see Committed projects)
94139	Non-MTS streets and roads pavement maintenance shortfall
94153*	Non-capacity increasing safety projects to improve congested intersections, local arterials and highways
98168*	Solano County intercity bus service and transit hubs (capital costs)
98199*	Park-and-ride lots
98212*	Bicycle and pedestrian projects
98509	Local streets and roads non-pavement maintenance shortfall (see Committed projects)
98556	Transportation for Livable Communities - county program
98565	Surface Transportation Program planning funds for the county
<i>NORTH BAY EAST-WEST</i>	
21823*	Operational and safety improvements on Route 12 from Sacramento River to I-80 (Phase 1)
94152	Widen Route 12 (Jamieson Canyon) from I-80 in Solano County to Route 29 in Napa County from 2 lanes to 4 lanes (Solano County portion of project)

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*\* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes. (Projects not marked with an asterik (2010) are projects in 2020/25).*

*2001 REGIONAL TRANSPORTATION PLAN  
TRACK 1*

SOLANO COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<i>EASTSHORE-NORTH</i>	
21817*	Vallejo intermodal ferry terminal (Phase 1)
21819*	Vallejo ferry maintenance facility
21820	Widen I-80 from 6 lanes to 8 lanes part way between Vacaville and Dixon
94146*	Express bus service on I-80 (capital costs for additional services beyond those in Regional Express Bus Program)
94148*	Construct rail station, track improvements, or intermodal centers for Capitol Corridor intercity rail or commuter rail service; potential station sites are Fairfield/Vacaville, Dixon and Benicia
94151*	Jepson Parkway (Phase 1): includes I-80/Leisure Town Road interchange improvements
98167	I-80 HOV lanes part way between I-680 and I-505 through Fairfield and Vacaville
<i>DIABLO</i>	
21807*	I-80/I-680/Route 12 interchange improvements (Phase 2)
98100*	Additional express bus service on I-680 (capital costs)

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*\* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes. (Projects not marked with an asterik (2010) are projects in 2020/25).*

*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

SONOMA COUNTY

*RTP  
Reference  
Number    Project/Program*

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*SONOMA COUNTY-WIDE*

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21862	Non-pavement maintenance (sidewalk, lighting, drainage, landscaping, etc. - committed revenues shown)
21870	Local bridge maintenance (committed revenues shown)
94694	Local streets and roads pavement maintenance (committed revenues shown)
94695	Sonoma County, Santa Rosa, Petaluma, Healdsburg, and Cloverdale Transit - transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets. Does not include system expansion).
98213	Bicycle and pedestrian projects
98572	Golden Gate Transit (Sonoma County share) -Transit operating and capital improvement program (including replacement, rehabilitation, and minor enhancements for rolling stock, equipment, fixed facilities and other capital assets; does not include expansion.)

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*2001 REGIONAL TRANSPORTATION PLAN  
COMMITTED FUNDING*

SONOMA COUNTY

*RTP  
Reference  
Number    Project/Program*

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*GOLDEN GATE*

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- |       |  |
|-------|--|
| 21338 | US 101 southbound auxiliary lane between Route 116 to East Washington  |
| 21346 | US 101/Route 116 separation: improve Route 116 onramp to southbound US 101   |
| 21423 | Widen Commerce Boulevard from 2 lanes to 3 lanes from US 101/Wilfred Avenue interchange to Redwood Drive Golf Course in Rohnert Park   |
| 21436 | Regional Express Bus Program: US 101/Santa Rosa to San Rafael/San Francisco  |
| 21898 | US 101/Route 116 east separation: replace bridge over separation and improve onramp to US 101 (from Petaluma River bridge to north of US 101/Route 116 east separation and overhead) |
| 94165 | US 101 northbound and southbound HOV lanes from Route 12 to Steele Lane in Santa Rosa; includes interchange modifications at Steele Lane and College Avenue                          |
| 94167 | Sonoma-Marin Rail station site acquisitions/upgrades   |
| 94685 | Route 12/Farmers Lane partial interchange improvements   |
| 94689 | US 101/Arata Lane interchange improvements in Windsor (Phase 2)  |
| 96016 | Reconstruct and upgrade Stony Point Road from Pepper Road to Petaluma city line  |

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*NORTH BAY EAST-WEST*

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|-------|--|
| 21899 | Rehabilitate Route 12, widen shoulders and replace bridge near Kenwood between Sonoma Creek to Boyes Boulevard |
| 21998 | Rehabilitate and widen Route 116 between Elphick Road to Redwood Drive in Sebastopol and Cotati                |
| 94691 | Route 121 traffic signal system and channelization at 8th Street   |
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## 2001 REGIONAL TRANSPORTATION PLAN TRACK 1

### SONOMA COUNTY

<i>RTP Reference Number</i>	<i>Project/Program</i>
<b><i>SONOMA COUNTY-WIDE</i></b>	
21901	Golden Gate Transit (Sonoma County share) capital replacement program shortfall (see Committed projects)
94155	Metropolitan Transportation System (MTS) streets and roads pavement rehabilitation shortfall (see Committed projects)
94156	Non-MTS streets and roads pavement rehabilitation shortfall
94163	Bicycle and pedestrian projects in Countywide Transportation Plan
98557	Transportation for Livable Communities - county program
98566	Surface Transportation Program planning funds for the county
<b><i>GOLDEN GATE</i></b>	
20003	North Coast Railroad Authority track maintenance and rehabilitation
21902*	Widen US 101 (adding an HOV lane in each direction) from Rohnert Park Expressway north through Wilfred Avenue interchange; includes reconstruction of the Wilfred Avenue interchange and reconfiguring local streets
21903*	Non-capacity increasing improvements to street and road projects as identified in Sonoma County Transportation Authority Countywide Transportation Plan
21904*	Widen US 101 (adding HOV lanes in each direction) from Old Redwood Highway in Petaluma north to Rohnert Park Expressway
98147	Widen US 101 (adding an HOV lane in each direction) from Marin County line north to Old Redwood Highway in Petaluma and convert some portions from expressway to freeway
98183*	Widen US 101 HOV lanes (adding an HOV lane in each direction) from Steele Lane north to Windsor River Road; includes River Road ramp improvements and northbound and southbound auxiliary lanes
<b><i>NORTH BAY EAST-WEST</i></b>	
98000	Route 37 traveler information system
98145	Operational projects on Routes 12/116/121

*\* Denotes projects that will be completed and operational by 2010 for federal air quality conformity purposes. (Projects not marked with an asterik (2010) are projects in 2020/25).*

APPENDIX C  
TRAVEL FORECASTING ASSUMPTIONS  
FOR 2005 TRANSPORTATION IMPROVEMENT PROGRAM

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## APPENDIX C

### Travel Forecasting Assumptions for 2005 Transportation Improvement Program (TIP)

## **Travel Forecasting Assumptions for Conformity Analysis of 2005 Transportation Improvement Program (TIP)**

This report documents the travel forecasting assumptions for the 2005 Transportation Improvement Program, and includes the following analysis years: 2006, 2010, 2020, and 2025. The analysis is based on the “latest planning assumptions” as documented below. In addition, the current conformity analysis also uses the latest upgrades to the MTC travel demand forecast model (BAYCAST 2000) which was updated and re-validated to a 1998 base year in Spring 2001.

The vehicle travel forecasts from the MTC travel demand model are then used in conjunction with the California Air Resource Board’s (ARB) motor vehicle emission model (EMFAC2002) to estimate total regional on road motor vehicle emissions.

In preparing these travel forecasts, MTC uses four basic sets of assumptions:

- Pricing Assumptions;
- Travel Behavior Assumptions;
- Demographic Assumptions; and
- Highway and Transit Network Assumptions.

Demographic and detailed highway and transit network definition assumptions are not included in this memo. The TIP travel forecasts are based on the socio-economic/land use forecast series *Projections 2003*, developed by the Association of Bay Area Governments (ABAG). These projections reflect the new regional “Smart Growth” land use assumptions and have been approved for use in the conformity analysis by the US DOT and EPA, subject to preparation of a future monitoring report. The projections also reflect the near term effects of the current economic slowdown on job creation in the Bay Area. Pricing assumptions include projected parking prices; gasoline and non-gasoline auto operating costs; fuel economy; bridge tolls; and transit fares.

Travel behavior assumptions include trip peaking factors, vehicle occupancy factors, and estimates of interregional commuters.

Additional travel forecasting methodology issues are addressed in this report. These are special methodological issues related to air quality and mobile source emissions inventories. The methodology issues include:

- Commercial Vehicle Methodology;
- Speed Post-Processing Methodology;
- Distribution of VMT by Speed Methodology; and
- Adjustment of Regional VMT and Trips.

### **I. Pricing Assumptions**

#### **A. Parking Costs**

The MTC demand models were estimated using nominal, or posted parking prices as opposed to actual parking prices. Actual parking prices would be the average parking price paid by a consumer, weighted by those who are subsidized by their employer and those who are not subsidized by their employer. For peak period parking cost, the monthly posted parking price is divided by 22 days per month to derive an average workday parking cost. The average workday parking cost is then divided by 8 hours to derive an average peak hour parking cost per hour in 1990 cents. In the home-based work mode choice model application,

the per hour charge is multiplied by 8 hours, then divided by 2, to derive a per vehicle trip charge. Next, the per vehicle trip charge is divided by the vehicle occupancy so that parking costs are equally distributed between vehicle drivers and passengers.

Base years 1990 and 1998, and forecast years 2000, 2005, 2010, 2020 and 2025 peak hour parking costs, by the MTC 1099 zone system, are shown in Table 1. Off-peak per hour parking costs – 1990, 1998, 2000, 2005, 2010, 2020 and 2025 – are shown in Table 2.

The MTC assumption for parking costs is that they will increase, in real terms, between one and two percent per year between 1990 and 2025. The core of downtown Berkeley and San Jose are assumed to grow by two percent per year between 1990 and 2025; in all other areas, by one percent.

MTC staff periodically inventory parking garages throughout the Bay Area to monitor trends in parking prices. The most recent update to this inventory was conducted fall 2000.

## **B. Auto Operating Costs**

The MTC travel demand models are based on non-linear auto operating costs which vary according to trip speed and distance. As speed increases, the fuel consumption rate (gallons per mile) decreases linearly. As distance increases, the share of “cold start” fuel consumption decreases. This internal model is used to derive trip-specific fuel economy (miles per gallon) which is multiplied by the per gallon gas price to derive per trip gasoline operating cost. A constant non-gasoline operating cost per mile is multiplied by trip distance to get per trip non-gas cost. Total auto operating cost per trip is the sum of the gasoline cost per trip plus the non-gasoline cost per trip plus any bridge tolls or parking charges. Details on the auto operating cost model are included in the BAYCAST Users Guide.

The MTC auto operating cost model is based on work conducted by Cambridge Systematics, Inc., as part of the *Urban Transportation Energy Conservation* study, published in 1978 (known as “UTEC”). The UTEC models were also used to derive auto operating costs for the Southern California Association of Governments’ new set of travel demand models.

The basic inputs to the BAYCAST model system, in terms of auto operating cost, are gasoline price (in 1990 constant dollars); the fuel correction factor (to represent fleet turnover and more fuel efficient vehicles); and the non-gasoline operating cost (in 1990 cents per mile.) Data on historical, 1990 to 1998, and assumed future year auto operating costs are detailed in Table 3 and Figures 1 and 2.

The notes to Table 3 indicate some of the major assumptions going into these auto operating cost forecasts. For gasoline prices, MTC uses future gas price estimates provided by the California Energy Commission (CEC) and the US Department of Energy’s Energy Information Administration (EIA). These agencies predict gas prices in the range of \$1.09 per gallon (CEC) to \$1.38/gallon (EIA) (in 1990 constant dollars.) The current assumption for years 2005 through 2025 is that gas prices will remain at their 2000 level, that is, \$1.83 per gallon in current (2000) dollars.

MTC is assuming no change in fuel economy relative to 1990. This respects the overall fuel economy trend as established by the US Energy Information Agency (EIA) in their “Household Vehicles Energy Consumption Report” (September 1997.) The EIA found no significant increase in overall passenger vehicle fuel economy between their national surveys conducted in 1988 and 1994. Overall this means that we are projecting that total auto operating cost per mile (gasoline + non-gasoline) will remain at 10.22 cents per mile between 2000 and 2025 (all in 1990 constant dollars).

Table 9 shows the ratio of San Francisco to Los Angeles gas prices between January 1995 and October 1997. Over this time period, San Francisco gas prices have been, on average, two percent higher than Los

Angeles gas prices. This is not a significant difference, so the recommendation is to use the CEC statewide gas price forecast unadjusted for Bay Area price differential.

The other key assumption is that non-gasoline operating cost (maintenance and repair, motor oil, parts, accessories) is 40 percent of total auto operating costs. This 40 percent figure is based on US Bureau of Labor Statistics data on consumer expenditures (see Table 4 of the MTC report: *Consumer Price Indices: Bay Area & U.S. Cities: 1950-1999.*) In a typical household, between five and six percent of a household's expenditures are related to auto operating costs. Gasoline cost has fluctuated from 55.6 percent to 73.5 percent of total auto operating costs over the past twenty years.

Auto ownership costs, which comprise around 10.2 percent of the average household's budget, are not used in determining trip running, or variable costs. Auto ownership costs includes the cost of new or used vehicle purchasing and financing, insurance premiums, and vehicle registration and licensing fees. These fixed costs of auto ownership are more important in determining the number and quality of vehicles to own or lease. Given the difficulty in projecting automobile quality and costs, household income is used as a surrogate in predicting auto ownership levels.

### C. Bridge Tolls

Bay Area voters approved Regional Measure 2 on the March 2, 2004 general election. This measure increases the toll on all Bay Area state-owned bridges from \$2.00 to \$3.00 as of July 1, 2004. Bay Area state-owned bridge tolls are scheduled to remain at \$3.00 for the direction of the long-range planning period (Table 4, Figure 3). Given an inflation assumption of 3 percent per year, a year 2025 toll of \$3.00 is equivalent to 105 cents in 1990 constant dollars (Table 10). This MTC bridge toll assumption is consistent with the financial forecasting assumptions used in projecting bridge toll revenues.

Note that discounted commute tickets were phased out with the introduction of FASTRAK (electronic toll collection) in 2000 and 2001. FASTRAK tolls were also discounted by 15 percent, but these FASTRAK discounts were discontinued in early 2002

The Golden Gate Bridge District has also introduced FASTRAK, and has also eliminated commute discounts as of June 2001.

All Bay Area bridges had a standard automobile toll of \$1.00 per crossing in 1990. Commute ticket booklets offer 15 to 32 percent discounts off of the \$1.00 toll, as follows:

#### 1990 Base Year Bridge Tolls

Bay Area Bridges	Auto Toll	Commute Tickets	Commuter Toll (\$/ticket)	Free Toll for SR3+ During Peak Period?
Antioch	\$1.00	\$27 / 40 tickets	\$0.68	No
Benicia/Martinez	\$1.00	\$27 / 40 tickets	\$0.68	No
Carquinez	\$1.00	\$27 / 40 tickets	\$0.68	No
Richmond/San Rafael	\$1.00	\$34 / 40 tickets	\$0.85	Yes (since 10/89)
Golden Gate	\$1.00	\$20 / 23 tickets	\$0.87	Yes
SF/Oakland Bay	\$1.00	\$34 / 40 tickets	\$0.85	Yes
San Mateo/Hayward	\$1.00	\$34 / 40 tickets	\$0.85	Yes
Dumbarton	\$1.00	\$34 / 40 tickets	\$0.85	Yes

For the state-owned bridges for FY 1989/90, MTC staff calculated an average auto toll weighted on commuter ticket usage and full toll usage, as follows:

### Computation of Average Auto Toll, 1989/90

Bay Area Bridges	Commuter Tickets	Total Autos & Trailers	Tickets as % of Total	Average Auto Toll
Antioch	225,569	1,605,516	14%	\$0.96
Benicia/Martinez	3,696,160	13,643,902	27%	\$0.91
Carquinez	4,724,623	17,585,673	27%	\$0.91
Richmond/San Rafael	1,257,179	8,428,199	15%	\$0.95
SF/Oakland Bay	4,227,393	36,521,920	12%	\$0.96
San Mateo/Hayward	1,845,246	12,131,171	15%	\$0.95
Dumbarton	2,085,757	8,381,841	25%	\$0.92

The average toll for the Golden Gate Bridge was 94 cents per revenue vehicle between July and December 1990 (source: Golden Gate Bridge District. Comparative Record of Traffic for the Month of December 1990).

For purposes of travel forecasting, the one-way toll is halved so that both directions on every bridge are allocated one-half of the total average toll. This is a technical necessity to counter the toll collection direction bias.

Note that free tolls for three-or-more person carpools were instituted on the Carquinez Strait bridges (Carquinez, Benicia/Martinez and Antioch) in October 1995. This is the only change in toll assumptions from the 1990 base year. The final tolls used in the 1990 model simulation are as follows:

### Bridge Tolls for Travel Forecasting: 1990 Base Year

Bay Area Bridges	Drive Alone & Carpool-2	3+ Carpool	Off-Peak Tolls
Antioch	\$0.48	\$0.48 / \$0.00	\$0.48
Benicia/Martinez	\$0.46	\$0.46 / \$0.00	\$0.46
Carquinez	\$0.48	\$0.48 / \$0.00	\$0.48
Richmond/San Rafael	\$0.48	\$0.00	\$0.48
Golden Gate	\$0.47	\$0.00	\$0.47
SF/Oakland Bay	\$0.48	\$0.00	\$0.48
San Mateo/Hayward	\$0.48	\$0.00	\$0.48
Dumbarton	\$0.46	\$0.00	\$0.46

## D. Transit Fares

Year 2004 transit fares are used for all future year forecasts (this means that fares will increase with inflation, so that their real value is not eroded). This assumption is borne out by past fare trends, and reflects the ongoing need for transit operators to periodically adjust their fares to keep up with increased labor costs, maintain their local contribution to capital replacement projects, and pay for increases in the cost of fuel and other supplies.

Base and top end transit fares by Bay Area transit operator, 1970 to 2004, are shown in Table 5.

Historical and projected base fares are charted in Figure 4.1 (Muni), Figure 4.2 (AC Transit), and Figure 4.3 (BART). These charts show base transit fares in current and 1990 constant dollars. These charts also

show modest real decreases in transit fares for Muni and BART over the 1995 to 2004 time period. The current dollar fares are based on a three percent per year increase in consumer price indices.

Most operators have increased their fares since the last conformity analysis, due to adverse economic conditions. Transit operator fares were revised to incorporate fares as of March 2004. Table 13 shows the changes in base fares, comparing the previous conformity determination with the current analysis.

## **E. Transit Network**

Transit operator service levels have also changed, due to the economic decline and the need to reduce service on some routes. The most extensive service level changes were to SamTrans and AC Transit District (Newark, Union City routes), Golden Gate and SCVTA. In the previous conformity analysis, 1998 service levels (routes and headways) were used in the baseline networks. In this conformity analysis, 2004 service levels are used. Other service level changes are summarized in Appendix A of the respective conformity analyses.

## **II. Travel Behavior Assumptions**

### **A. Vehicle Peaking Factors**

The MTC BAYCAST model system is oriented to the production of daily and AM peak period traffic assignments. In addition, the user can factor the two-hour peak period vehicle trip tables to peak hour tables using peak hour-to-peak period factors by trip purpose.

In contrast to the old MTCFCAST model system, the BAYCAST system directly simulates the number of AM peak period home-to-work vehicle trips, derived from the home-to-work departure time choice model. This is basically a “peak spreading” model that will predict fewer trips in the peak period when congestion levels increase. The standard approach of using fixed shares for all other trip purposes is still needed to augment this new departure time choice model.

Old-style (MTCFCAST) AM and PM peak hour vehicle peaking factors are shown in Table 6.1. New-style (BAYCAST) AM and PM peak period vehicle peaking factors are shown in Table 6.2. The AM peak period is defined as 7:00-9:00 AM. The PM peak period is defined as 4:00-6:00 PM.

As a part of the peak period traffic assignment calibration and validation process, a set of peak period calibration factors were developed. These calibration factors, documented in Table 7, reflect the subregional variation from the regional peaking factors shown in Table 6.2.

Data from the 1990 household travel survey show that the AM peak hour (07:30-08:30) is 58 percent of total vehicle trips occurring in the AM peak period (07:00-09:00) (930,038 vehicle trips / 1,610,546 vehicle trips, from Survey Working Paper #4, page 160, Table 2.3.7A.) So, a rough rule of thumb is to multiply any AM peak (two-hour) period traffic assignment by 0.58 to get a rough estimate of peak hour predicted traffic volumes.

### **B. Vehicle Occupancy Factors**

In the old MTC model system, vehicle occupancy assumptions were important input assumptions to the home-based shop, home-based social/recreation and the non-home-based mode choice model system. These vehicle occupancy assumptions were used, and are still used, for dividing the vehicle trip cost between vehicle drivers and passengers.



All of the new mode choice models either split the number of person trips by vehicle occupancy level (i.e., drive alone, shared ride 2, shared ride 3+), or they split the in-vehicle person trips by vehicle driver and vehicle passenger modes. The issue in auto occupancy forecasting is to ensure that the input occupancy assumption is reasonably consistent with the forecasting output vehicle occupancy rate.

Historical vehicle occupancy rates, from MTC household travel surveys, and BAYCAST predicted vehicle rates for 1990 and 2025, are shown in Table 8.

For the home-based work, home-based shop and home-based social/recreation mode choice models, trips are split by occupancy level (DA, SR2, SR3+). For the three home-based school mode choice models and non-home-based trips, person trips are split into vehicle driver and vehicle passenger. For home-based grade school trips, vehicle driver is not an available mode. This means that the vehicle driver trip for escorting children to school is typically included as a home-based shop/other shared ride 2 or shared ride 3+ trip; the vehicle passenger (the child) is classified as a home-based grade school vehicle passenger trip.

This is complex, but reflects the nature of travel: where persons in a particular vehicle may be traveling to different activities. For example, the parent's trip purpose is to escort the child to school (home-based shop/other); the child's trip purpose is to attend school (home-based school).

Historical and projected vehicle occupancy factors are shown in Table 8. Note that these are not assumptions per se but model simulations.

### **C. Interregional Commuters**

Assumptions about the number of interregional commuters is key in two respects: first, intraregional home-based work productions and attractions need to be adjusted to reflect in-commuting and out-commuting from and to Bay Area jobs and households; second, interregional vehicle trips are needed to augment the intraregional trips included in the standard BAYCAST travel demand models. Interregional trips are the same as used in the 2001 Regional Transportation Plan.

Interregional commuters are estimated by factoring the 1990 Census journey-to-work data file (STP214) using a 46-by-46 matrix that comprises the 34 Bay Area superdistricts and the 12 Bay Area neighbor counties. These sketch planning commuter forecasts are prepared for the years 2000, 2010 and 2020. The factored year 2020 interregional commuter matrix is used as the basis for estimating background interregional year 2025 daily and peak period vehicle trips. This is basically a "sketch planning" effort to complement the formal models used to predict intraregional personal and intraregional commercial travel. (Note that the detailed Census 2000 data on district-to-district commuting patterns is still not available as of March 2004. This is why the 1990 Census journey-to-work data is still being used.)

These interregional commuter forecasts are documented in the report "Commuter Forecasts for the San Francisco Bay Area: 1990-2020 (Based on ABAG Projections 2000): Data Summary" published October 2000.

### **III. Demographic Assumptions**

MTC used ABAG's Projections 2003 forecasts (adopted March 2003) for future year population and employment assumptions and for the geographic distributions of residents and jobs throughout the region. For use in MTC's travel demand model, MTC combines and allocates ABAG's tract-level forecasts to MTC's 1099 regional travel analysis zone system for all years.

## **IV. Transportation Network Assumptions**

A major part of the TIP conformity analysis is the definition of highway, transit, and pedestrian/bicycle networks for various analysis years. These networks describe the supply of transportation capacity and various service characteristics that influence travel behavior. The 2006 transportation network reflects the projects in the TIP that will be operational in 2006. The 2010, 2020, and 2025 networks are the same as in the 2001 Regional Transportation Plan, which is the currently adopted long range plan. Projects assumed in the transportation network for the various analysis years are listed in Appendices A and C.

## **V. Commercial Vehicle Methodology**

The MTC BAYCAST commercial vehicle models are based on the truck trip generation models developed for Caltrans and Alameda County as part of the 1992 I-880 Intermodal Corridor Study; and

truck trip distribution models documented in the 1996 report “Quick Response Freight Manual” produced by the US Department of Transportation (usable truck trip distribution models were not developed for the I-880 Intermodal Corridor Study).

These truck models are specifically limited to larger trucks of six-or-more tires. There are three sub-purposes to the MTC truck models:

1. “Small Trucks” (two-axle, six-tire vehicles);
2. “Medium Trucks” (three-axle vehicles); and
3. “Combination Trucks” (four-or-more axle vehicles).

Very small, two-axle four-tire commercial vehicles are not included in these truck models or disaggregated in Caltrans “truck counts”. They are, however, included as a portion of the regional “non-home-based” vehicle trips and are included in total daily traffic counts and traffic validation efforts. For the 1990 regional validation non-home-based vehicle driver trips were increased by approximately 10.6 percent to account for these very small commercial vehicles.

The following sidebar summarizes the MTC BAYCAST truck trip generation and distribution models:

### Garage-Based Truck Trip Production Models

Two-Axle Truck Productions =  $0.011 * \text{MFGEMP} + 0.014 * \text{RETEMP} + 0.0105 * \text{SEREMP} + 0.046 * \text{OTHEMP}$

Three-Axle Truck Productions =  $0.0014 * \text{MFGEMP} + 0.00012 * \text{RETEMP} + 0.0037 * \text{OTHEMP}$

Four--Axle Truck Productions =  $0.0044 * \text{MFGEMP} + 0.0027 * \text{SEREMP} + 0.0084 * \text{OTHEMP}$

### Garage-Based Truck Trip Attraction Models

Two-Axle Truck Attractions =  $0.0234 * \text{TOTEMP}$

Three-Axle Truck Attractions =  $0.0046 * \text{TOTEMP}$

Four--Axle Truck Attractions =  $0.0136 * \text{TOTEMP}$

### Non-Garage-Based Truck Trip Production & Attraction Models

Two-Axle Truck Productions and Attractions =  $0.0324 * \text{TOTEMP}$

Three-Axle Truck Productions and Attractions =  $0.0039 * \text{TOTEMP}$

Four--Axle Truck Productions and Attractions =  $0.0073 * \text{TOTEMP}$

Where:

MFGEMP = Manufacturing Employment

RETEMP = Retail Employment

SEREMP = Service Employment

OTHEMP = Other Employment (Wholesale Trade, Agriculture/Mining, Other)

TOTEMP = Total Employment

Truck Trip Distribution Models: Gravity Models based on AM Peak Period Travel Time

Two-Axle Truck Trip Distribution Friction Factor:  $FF_{ij} = \exp(-0.08 * TT_{ij})$

Three-Axle Truck Trip Distribution Friction Factor:  $FF_{ij} = \exp(-0.1 * TT_{ij})$

Four--Axle Truck Trip Distribution Friction Factor:  $FF_{ij} = \exp(-0.03 * TT_{ij})$

In terms of mobile source emissions inventories, the MTC estimates of mobile source emissions are based on the “default” vehicle type and vehicle technology mix assumed by the California Air Resources Board (CARB) in their EMFAC/BURDEN model series. The CARB assumptions on vehicle type mix are based on the same Caltrans databases and truck counts as used by MTC in model validation, only adjusted by CARB staff to conform to the weight-based vehicle classes needed as input to the EMFAC emission factor models.

## **VI. Speed Post-Processing Methodology**

The MTC BAYCAST models were updated and re-validated to a 1998 base year in Spring 2001. A major part of this effort was the validation of traffic assignments to observed daily traffic volumes, and observed AM peak period traffic volumes and speeds, primarily for freeways. The daily and AM peak period traffic volume validation was fairly successful as was the AM peak period freeway speed validation (see report “1998 Base Year Validation of Travel Demand Models for the San Francisco Bay Area” May 2001). On the other hand, the speed validation for expressways and arterials was uniformly

too high (too fast), and needed correction. MTC staff tested several speed post-processing models in order to prepare reasonable estimates of congested system speeds. This section documents the standard set of speed-flow models used in the iterative traffic assignment / mode choice equilibration process, and the post-processing set of speed-flow models used to develop corrections to peak speeds.

The standard set of speed-flow models used in the 1998 base year validation effort includes an MTC variation on the “BPR” curve, and application of the “Akçelik” speed-flow curve documented in previous MTC research. The “MTC Breakdown Curve” is used for freeways and freeway-to-freeway segments; the “Akçelik Curve” is used for expressways, collectors, freeway ramps, major arterials and metered ramps.

The post-processing set of speed-flow models used in the 1998 base year validation and the current set of forecasts includes the identical “MTC Breakdown Curve” for freeways and freeway-to-freeway segments; and modified free-flow speeds and delay parameters for applying the “Akçelik Curve” for expressways, collectors, freeway ramps, major arterials and metered ramps.

For non-freeway segments, the post-processed free-flow speeds are decreased by 15 miles per hour for expressways and by 5 miles per hour for arterials, collectors and ramps. For all non-freeway segments the “Ja” delay parameter in the Akçelik model is calibrated for each facility type / area type combination, based on “critical speeds” (congested speeds at V/C ratio of 1.0) using the “MTC Breakdown Curve.”

In the 1998 validation, this post-processing step significantly improves the arterial/expressway speed validation, from a root-mean-square-error (RMSE) of 12.02 using the standard models to a RMSE of 8.16 using the post-processing adjustments. This research is included in a staff memo (R. Singh to C. Purvis, “1998 Model Validation (RVAL98) – Post-Processor” June 6, 2001.)

MTC assumptions of per lane capacity and free-flow speed are “lookup” tables based on facility type (freeway, major arterial, etc.) and area type (rural, suburban, etc.) Area types are based on “area density,” a combined measure of population and employment density. The standard and post-processing free-flow speeds are shown in Table 11.

As applied in forecasting, the speed post-processing is only applied to arterial and expressway speeds, not to arterial or expressway volumes or VMT. No speed post-processing is done for freeway or freeway-to-freeway segments.

The following box summarizes the MTC standard and post-processing set of speed-flow models.

#### **MTC Standard & Post-Processing Set of Speed-Flow Models**

##### MTC Breakdown Curve (Freeways & Freeway-to-Freeway Facilities)

$$t = t_o * (1 + 0.20 * ((x)/0.75)^6)$$

##### Akçelik Curve (All Other Facilities)

$$t = t_o + \{0.25 * T * [(x-1) + ((x-1)^2 + (16 * Ja * L^2/T^2))^{0.5}]\}$$

where:

t = average travel time per unit distance (hours/mile)

t<sub>o</sub> = free-flow travel time per unit distance (hours/mile)

T = flow period, i.e., the time interval in hours during which an average arrival (demand) flow rate, v, persists

Q = capacity

x = the degree of saturation, i.e., v/Q

Ja = the delay parameter (Expressway = 0.2, Collector=1.2, Freeway Ramp=0.17, Major Arterial=0.4, Metered Ramp=0.2)

Ja = the delay parameter (Post-Processing = calculated for each facility type, area type combination, where: Ja = (Tc - To)<sup>2</sup> / L<sup>2</sup> and "Tc" is the critical speed at V/C ratio of 1.0)

L = Link length (miles)

## **VII. Adjustment of Regional VMT and Trips Methodology**

Regional VMT and engine starts (needed for emission calculations) are forecasted using a combination of output from MTC's travel demand forecasting model and base year (2000) VMT information provided by the California Air Resources Board (ARB). The ARB base year VMT comes from the State Bureau of Automotive Repair's (BAR) biennial inspection/maintenance odometer records for registered Bay Area vehicles. MTC then "grows" this VMT consistent with the growth in VMT projected in MTC's regional travel model forecasts.

The BAR-based VMT will over-estimate Bay Area VMT by including Bay Area-registered vehicle travel occurring outside the nine-county region. The BAR-based VMT method will also not include Bay Area VMT by non-resident vehicular travel occurring inside the nine-county region. ARB considers that these anomalies offset each other, and that the resulting regional VMT level is a conservatively high value. The 2000 ARB estimates, based on BAR inspection/maintenance data, show 159,642 thousand VMT per weekday. In comparison, MTC estimates 134,256 thousand VMT per weekday in year 2000. ARB and MTC continue to address ways to improve the estimation of actual base year VMT, as all potential methods have some limitations.

For purposes of the conformity analysis on the Bay Area 2005 TIP, VMT for the horizon years 2006, 2010, 2020 and 2025 was calculated by replacing the 2003 summer MTC travel demand forecast VMT submitted to ARB with the corresponding analysis year VMT from the 2005 TIP travel demand forecast. The VMT values generated from the 2005 TIP forecast years were used to establish an updated annual compounded growth rate between the calendar years 2005 to 2006, 2009 to 2010, 2019 to 2020 and 2024 to 2025. These updated growth rates established new countywide and regional VMT totals specific to the 2005 TIP conformity analysis.

Regional engine starts (which generate event-specific emissions ) are based on ARB's estimate of approximately 6.72 to 6.75 engine starts per vehicle per day. This 6.75 engine starts per day value is based

on a small-scale survey of instrumented Sacramento-area vehicles conducted by ARB. This contrasts to other Bay Area, California and National surveys that show trip rates ranging from 2.5 to 3.5 vehicle trips per vehicle per day. For more discussion on this engine starts per vehicle issue, refer to the November 24, 1999 letter from the MTC to the California Air Resources Board. ARB and MTC have also agreed to continue working on this issue.

### **VIII. Distribution of VMT by Speed Methodology**

An important input to ARB's SF Bay Area EMFAC 2003 mobile source emissions inventory model are county-level files of the share of vehicle miles travel by speed cohort, by time of day. Data is needed for 13 speed cohorts and 6 time-of-day periods (0000-0600, 0600-0900, 0900-1200, 1200-1500, 1500-1800 and 1800-2400). Regional totals of VMT by the 13 speed cohorts for 1998, 2010 and 2025 are summarized and charted in Table 12. These VMT values include intra-zonal VMT and terminal distance VMT.

It is important to note that these speeds are extracted from the post-processed highway assignments and represent average link speeds. They do not represent the range of actual traffic speeds that may be represented in average link speeds. For example, a 25 mile per hour average link speed on a freeway segment is very congested and represents "stop-and-go" conditions with speeds ranging from 0 to 65 miles per hour. The same 25 mile per hour average link speed on an arterial segment may represent a fairly "steady state" speed on a signal coordinated arterial system.

The first step in preparing the VMT-by-speed share file is the preparation of daily traffic assignments. The daily vehicle trips output from the last mode choice model iteration are split into AM-plus-PM peak period vehicle trips, and off-peak period vehicle trips. The peak period vehicle trips, representing the six peak hours, are assigned "all-or-nothing" to the MTC regional highway network using the post-processed congested speeds. The off-peak period vehicle trips, representing the 18 off-peak hours, are also assigned "all-or-nothing" to the same MTC regional highway network using free-flow speeds.

The "loaded" highway network with AM peak period and daily traffic assignment results are then exported into text files and subsequently imported into SAS (Statistical Analysis System) for further post-processing. Daily assignment volumes are then multiplied by link distance to yield vehicle miles of travel (VMT) by link, which are in turn summarized at the county-of-occurrence by speed-cohort level.

There are three components of regional VMT: interzonal VMT that is assigned to highway networks; intra-zonal VMT that is not assigned to highway networks; and terminal distance VMT that is not assigned to highway networks.

Intra-zonal vehicle trips are not assigned to highway networks. The VMT associated with intra-zonal vehicle trips is derived by exporting the intra-zonal vehicle trips and intra-zonal door-to-door distance data into a format compatible with SAS, and for merging with the daily traffic assignment SAS files (Intra-zonal VMT is approximately 6.9 percent of regional VMT in 1998, decreasing to 6.4 percent of regional VMT by 2025). SAS routines are then used to apply the "terminal distance" vehicle miles of travel to the inter-zonal and intra-zonal VMT. "Terminal distance" VMT is defined as the amount of travel from the "average household" or "average activity location" in a travel analysis zone to the nearest highway link represented in the regional highway networks.

These speed distributions were then applied to passenger cars (PC), light-duty trucks (T1, T2), medium-duty trucks (T3), and motorcycles (mcy) in EMFAC 2002. EMFAC2002 model defaults were used on all other vehicle types and times of day.

**Table 1**  
**Peak Parking Cost Assumptions by Bay Area Regional Travel Analysis Zones**  
**Peak Period Parking Costs in 1990 cents per hour**

City	Neighborhood	Zone	1990 Peak	1998 Peak	2000 Peak	2005 Peak	2010 Peak	2020 Peak	2025 Peak	Percent Growth/Yr
San Francisco	Financial District	1	133	152	160	174	189	224	244	1.7%
San Francisco	Financial District	2	133	152	140	152	166	196	213	1.7%
San Francisco	West of Union Square	3	83	94	150	162	176	206	223	1.6%
San Francisco	Tenderloin	4	83	94	85	92	100	117	126	1.6%
San Francisco	Civic Center	5	67	69	70	71	72	74	75	0.3%
San Francisco	South of Market	6	67	69	65	66	67	69	70	0.3%
San Francisco	South of Market	7	83	94	85	92	100	117	126	1.6%
San Francisco	South of Market	8	100	114	130	141	154	182	198	1.7%
San Francisco	South of Market	9	100	114	145	158	172	203	221	1.7%
San Francisco	Rincon Hill	10	83	96	120	131	143	171	187	1.8%
San Francisco	Moscone Center	11	67	77	90	98	108	129	141	1.8%
San Francisco	South of Market	12	67	77	60	66	72	86	94	1.8%
San Francisco	South of Market	13	67	77	60	66	72	86	94	1.8%
San Francisco	South of Market	14	67	77	70	77	84	100	109	1.8%
San Francisco	South of Market	15	67	77	80	87	96	114	125	1.8%
San Francisco	Embarcadero	16	133	152	140	152	166	196	213	1.7%
San Francisco	Jackson Square	17	133	152	170	185	201	238	259	1.7%
San Francisco	Chinatown	18	133	152	170	185	201	238	259	1.7%
San Francisco	Nob Hill	19	67	76	110	119	129	151	164	1.6%
San Francisco	Polk Gulch	20	50	59	70	78	86	106	118	2.1%
San Francisco	Polk Gulch	21	50	59	70	78	86	106	118	2.1%
San Francisco	Polk Gulch	22	50	59	70	78	86	106	118	2.1%
San Francisco	Russian Hill	23	50	59	60	67	74	91	101	2.1%
San Francisco	Nob/Russian Hill	24	33	42	80	93	108	144	168	3.0%
San Francisco	North Beach	25	133	152	125	136	148	175	191	1.7%
San Francisco	North Waterfront	26	133	152	120	131	142	168	183	1.7%
San Francisco	Telegraph Hill	27	50	63	80	93	108	144	168	3.0%
San Francisco	Fishermans Wharf	28	50	63	80	93	108	144	168	3.0%
San Francisco	North Beach	29	33	42	80	93	108	144	168	3.0%
San Francisco	Russian Hill	30	50	63	80	93	108	144	168	3.0%
San Francisco	Greater Van Ness	33	0	0	55	61	68	83	92	2.1%
San Francisco	Union Street	34	0	0	0	0	0	0	0	2.1%
San Francisco	Lafayette Park	35	0	0	55	61	68	83	92	2.1%
San Francisco	Western Addition	56	0	0	0	0	0	0	0	2.1%
San Francisco	Western Addition	57	50	59	50	55	62	76	84	2.1%
San Francisco	Western Addition	59	50	59	55	61	68	83	92	2.1%
San Francisco	Hayes Valley	60	58	59	55	56	57	58	59	0.3%
San Francisco	Opera & Symphony	61	58	59	70	71	72	74	75	0.3%
San Francisco	Haight-Fillmore	62	25	28	35	38	41	47	51	1.5%
San Francisco	Castro/Mission Dolores	69	0	0	0	0	0	0	0	1.5%
San Francisco	Mission District	71	0	0	0	0	0	0	0	1.5%
San Francisco	Mission District	72	0	0	0	0	0	0	0	1.5%
San Francisco	Mission District	73	0	0	0	0	0	0	0	1.5%

**Table 1****Peak Parking Cost Assumptions by Bay Area Regional Travel Analysis Zones****Peak Period Parking Costs in 1990 cents per hour**

City	Neighborhood	Zone	1990 Peak	1998 Peak	2000 Peak	2005 Peak	2010 Peak	2020 Peak	2025 Peak	Percent Growth/Yr
San Francisco	Mission District	74	0	0	0	0	0	0	0	1.5%
San Francisco	Inner Mission	75	25	28	35	38	41	47	51	1.5%
San Francisco	Inner Mission	76	25	28	35	38	41	47	51	1.5%
San Francisco	Inner Mission	77	33	37	35	38	41	47	51	1.5%
San Francisco	China Basin	79	47	51	50	53	55	61	64	1.0%
San Mateo	Downtown	181	0	0	0	0	0	0	0	0.0%
San Mateo	Downtown	183	0	0	0	0	0	0	0	0.0%
Redwood City	Downtown	218	0	0	0	0	0	0	0	0.0%
Redwood City	Downtown	219	0	0	0	0	0	0	0	0.0%
Palo Alto	Stanford University	244	0	0	17	17	17	17	17	0.0%
Palo Alto	Downtown	245	0	0	17	17	17	17	17	0.0%
San Jose	Civic Center	397	42	49	18	20	22	27	30	2.0%
San Jose	St. James Park	400	42	49	43	47	52	63	70	2.0%
San Jose	San Jose State Univ.	401	42	49	33	36	40	49	54	2.0%
San Jose	Park Center	402	42	49	45	49	55	67	73	2.0%
San Jose	San Jose Convention Ctr.	410	0	0	29	32	35	43	47	2.0%
Oakland	Upper Downtown	696	50	54	55	58	61	67	71	1.0%
Oakland	Lake Merritt	697	50	54	55	58	61	67	71	1.0%
Oakland	Laney College	698	33	36	30	32	33	37	38	1.0%
Oakland	Downtown	699	50	54	55	58	61	67	71	1.0%
Oakland	Jack London Square	700	33	36	30	32	33	37	38	1.0%
Oakland	North of Downtown	709	50	54	30	32	33	37	38	1.0%
Berkeley	Campus Southside	730	25	29	32	36	39	48	53	2.0%
Berkeley	Campus Southside	731	25	29	32	36	39	48	53	2.0%
Berkeley	UC California Campus	732	25	29	26	28	31	38	42	2.0%
Berkeley	Downtown	733	58	68	59	65	72	87	97	2.0%
Berkeley	North Shattuck	738	58	68	32	35	39	48	52	2.0%



**Table 2**  
**Off-Peak Parking Cost Assumptions by Bay Area Regional Travel Analysis Zones**  
**Off-Peak Period Parking Costs in 1990 cents per hour**

City	Neighborhood	Zone	1990	1998	2000	2005	2010	2020	2025	Percent Growth/Yr
			Off-Peak Parking (per Hour)							
San Francisco	Financial District	1	500	572	525	571	621	735	800	1.7%
San Francisco	Financial District	2	333	381	230	250	272	322	351	1.7%
San Francisco	West of Union Square	3	333	378	440	476	516	604	654	1.6%
San Francisco	Tenderloin	4	333	378	325	352	381	446	483	1.6%
San Francisco	Civic Center	5	100	102	115	117	118	122	124	0.3%
San Francisco	South of Market	6	100	102	200	203	206	212	216	0.3%
San Francisco	South of Market	7	167	189	190	206	223	261	283	1.6%
San Francisco	South of Market	8	417	477	570	620	675	799	869	1.7%
San Francisco	South of Market	9	375	429	600	653	710	841	914	1.7%
San Francisco	Rincon Hill	10	292	336	390	426	466	557	609	1.8%
San Francisco	Moscone Center	11	250	288	260	284	311	371	406	1.8%
San Francisco	South of Market	12	100	115	165	180	197	236	258	1.8%
San Francisco	South of Market	13	100	115	165	180	197	236	258	1.8%
San Francisco	South of Market	14	100	115	200	219	239	286	312	1.8%
San Francisco	South of Market	15	100	115	350	383	418	500	547	1.8%
San Francisco	Embarcadero	16	167	191	385	419	456	539	587	1.7%
San Francisco	Jackson Square	17	417	477	550	598	651	771	838	1.7%
San Francisco	Chinatown	18	167	191	250	272	296	350	381	1.7%
San Francisco	Nob Hill	19	125	142	400	433	469	549	595	1.6%
San Francisco	Polk Gulch	20	75	89	95	105	117	144	160	2.1%
San Francisco	Polk Gulch	21	75	89	95	105	117	144	160	2.1%
San Francisco	Polk Gulch	22	67	79	75	83	92	114	126	2.1%
San Francisco	Russian Hill	23	67	79	75	83	92	114	126	2.1%
San Francisco	Nob/Russian Hill	24	67	84	80	93	108	144	168	3.0%
San Francisco	North Beach	25	133	153	175	190	207	245	267	1.7%
San Francisco	North Waterfront	26	167	191	300	326	355	420	457	1.7%
San Francisco	Telegraph Hill	27	100	127	330	383	443	596	691	3.0%
San Francisco	Fishermans Wharf	28	167	211	400	464	538	722	838	3.0%
San Francisco	North Beach	29	67	84	330	383	443	596	691	3.0%
San Francisco	Russian Hill	30	67	84	260	301	349	470	544	3.0%
San Francisco	Greater Van Ness	33	0	0	75	83	92	114	126	2.1%
San Francisco	Union Street	34	67	79	75	83	92	114	126	2.1%
San Francisco	Lafayette Park	35	67	79	75	83	92	114	126	2.1%
San Francisco	Western Addition	56	75	89	90	100	111	136	151	2.1%
San Francisco	Western Addition	57	75	89	90	100	111	136	151	2.1%
San Francisco	Western Addition	59	75	89	90	100	111	136	151	2.1%
San Francisco	Hayes Valley	60	67	68	85	86	88	90	92	0.3%
San Francisco	Opera & Symphony	61	67	68	90	91	93	96	97	0.3%
San Francisco	Haight-Fillmore	62	42	47	50	54	58	67	73	1.5%
San Francisco	Castro/Mission Dolores	69	33	38	45	48	52	61	65	1.5%
San Francisco	Mission District	71	42	47	50	54	58	67	73	1.5%
San Francisco	Mission District	72	42	47	50	54	58	67	73	1.5%
San Francisco	Mission District	73	42	47	50	54	58	67	73	1.5%

**Table 2****Off-Peak Parking Cost Assumptions by Bay Area Regional Travel Analysis Zones****Off-Peak Period Parking Costs in 1990 cents per hour**

City	Neighborhood	Zone	1990	1998	2000	2005	2010	2020	2025	Percent Growth/Yr
			Off-Peak Parking (per Hour)							
San Francisco	Mission District	74	42	47	50	54	58	67	73	1.5%
San Francisco	Inner Mission	75	42	47	50	54	58	67	73	1.5%
San Francisco	Inner Mission	76	42	47	50	54	58	67	73	1.5%
San Francisco	Inner Mission	77	92	103	50	54	58	67	73	1.5%
San Francisco	China Basin	79	92	99	100	105	110	122	128	1.0%
San Mateo	Downtown	181	18	18	20	20	20	20	20	0.0%
San Mateo	Downtown	183	18	18	20	20	20	20	20	0.0%
Redwood City	Downtown	218	8	8	9	9	9	9	9	0.0%
Redwood City	Downtown	219	8	8	9	9	9	9	9	0.0%
Palo Alto	Stanford University	244	0	0	61	61	61	61	61	0.0%
Palo Alto	Downtown	245	0	0	61	61	61	61	61	0.0%
San Jose	Civic Center	397	75	88	113	125	138	168	185	2.0%
San Jose	St. James Park	400	75	88	73	81	89	109	120	2.0%
San Jose	San Jose State Univ.	401	150	176	92	101	112	136	150	2.0%
San Jose	Park Center	402	150	176	194	214	236	288	318	2.0%
San Jose	San Jose Convention Ctr.		0	0	92	101	112	136	150	2.0%
Oakland	Upper Downtown	696	125	135	120	126	133	146	154	1.0%
Oakland	Lake Merritt	697	125	135	120	126	133	146	154	1.0%
Oakland	Laney College	698	83	90	75	79	83	92	96	1.0%
Oakland	Downtown	699	125	135	120	126	133	146	154	1.0%
Oakland	Jack London Square	700	83	90	75	79	83	92	96	1.0%
Oakland	North of Downtown	709	125	135	120	126	133	146	154	1.0%
Berkeley	Campus Southside	730	83	98	96	106	117	143	158	2.0%
Berkeley	Campus Southside	731	83	98	96	106	117	143	158	2.0%
Berkeley	UC California Campus	732	83	98	96	106	117	143	158	2.0%
Berkeley	Downtown	733	67	78	96	106	117	143	158	2.0%
Berkeley	North Shattuck	738	67	78	50	55	61	74	82	2.0%

**Table 3**  
**Historical and Projected Auto Operating Costs, 1990 - 2030**

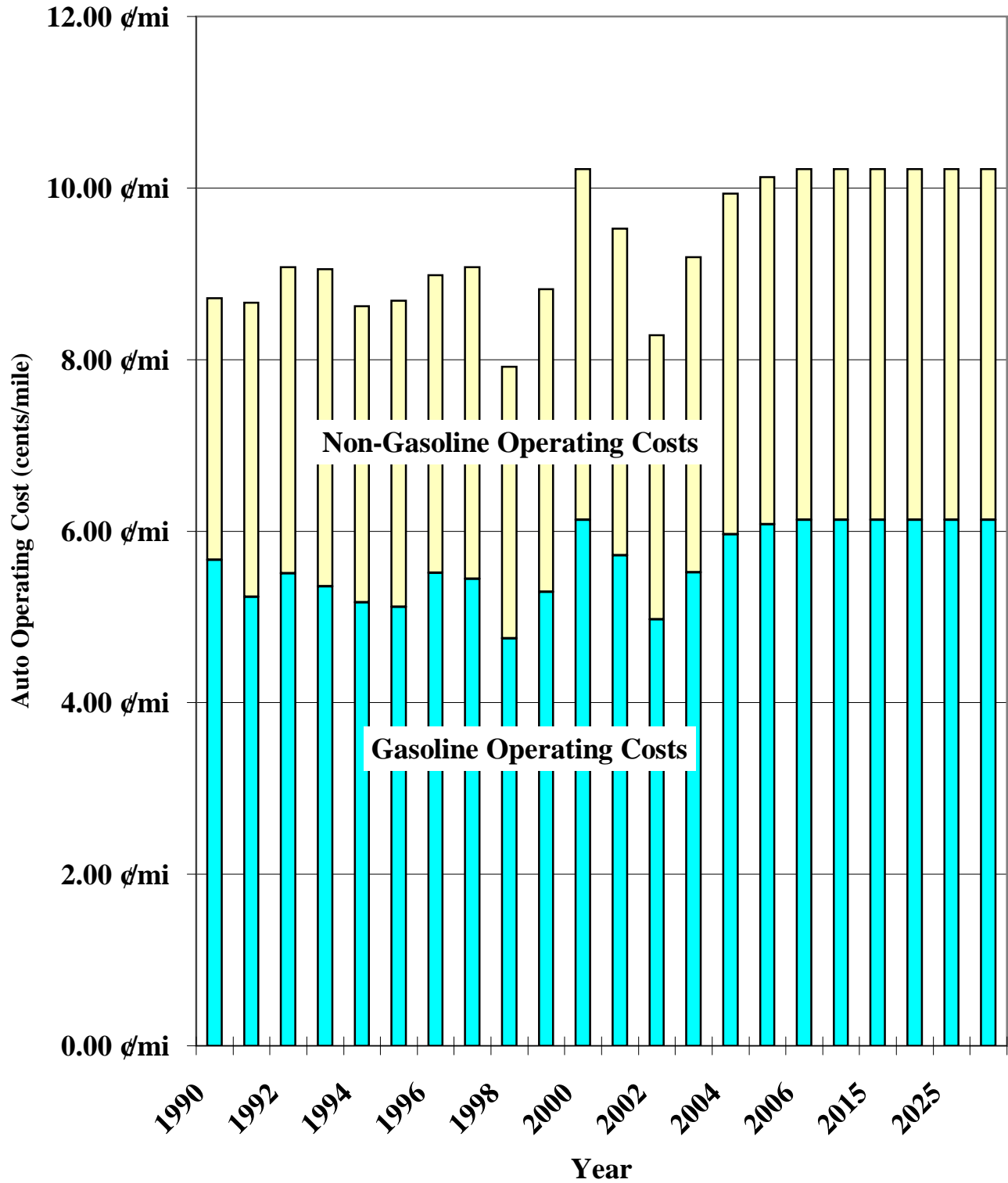
Year	Retail Gas Price (Current \$)	CPI	Gas Price (1990\$)	Fuel Correction Factor	Fuel Economy (MPG)	Gasoline Operating Cost (¢/mi) (1990\$)	Non-Gas Operating Cost (¢/mi) (1990\$)	Total Auto Operating Cost (¢/mi) (1990\$)
1990	\$1.241	406.0	\$1.241	1.000	21.9	5.67 ¢/mi	3.05 ¢/mi	8.72 ¢/mi
1991	\$1.197	423.9	\$1.146	1.000	21.9	5.23 ¢/mi	3.43 ¢/mi	8.66 ¢/mi
1992	\$1.302	438.1	\$1.207	1.000	21.9	5.51 ¢/mi	3.57 ¢/mi	9.08 ¢/mi
1993	\$1.299	449.9	\$1.172	1.000	21.9	5.35 ¢/mi	3.70 ¢/mi	9.05 ¢/mi
1994	\$1.275	457.1	\$1.132	1.000	21.9	5.17 ¢/mi	3.45 ¢/mi	8.62 ¢/mi
1995	\$1.286	466.0	\$1.120	1.000	21.9	5.12 ¢/mi	3.57 ¢/mi	8.69 ¢/mi
1996	\$1.434	482.3	\$1.207	1.000	21.9	5.51 ¢/mi	3.47 ¢/mi	8.98 ¢/mi
1997	\$1.448	493.0	\$1.192	1.000	21.9	5.45 ¢/mi	3.63 ¢/mi	9.08 ¢/mi
1998	\$1.304	508.9	\$1.040	1.000	21.9	4.75 ¢/mi	3.17 ¢/mi	7.92 ¢/mi
1999	\$1.514	530.2	\$1.159	1.000	21.9	5.29 ¢/mi	3.53 ¢/mi	8.82 ¢/mi
2000	\$1.832	553.9	\$1.343	1.000	21.9	6.13 ¢/mi	4.09 ¢/mi	10.22 ¢/mi
2001	\$1.800	583.9	\$1.252	1.000	21.9	5.71 ¢/mi	3.81 ¢/mi	9.52 ¢/mi
2002	\$1.590	593.2	\$1.088	1.000	21.9	4.97 ¢/mi	3.31 ¢/mi	8.28 ¢/mi
2003	\$1.797	603.9	\$1.208	1.000	21.9	5.52 ¢/mi	3.68 ¢/mi	9.19 ¢/mi
2004	\$2.000	622.0	\$1.305	1.000	21.9	5.96 ¢/mi	3.97 ¢/mi	9.93 ¢/mi
2005	\$2.100	640.7	\$1.331	1.000	21.9	6.08 ¢/mi	4.05 ¢/mi	10.13 ¢/mi
2006	\$2.183	659.9	\$1.343	1.000	21.9	6.13 ¢/mi	4.09 ¢/mi	10.22 ¢/mi
2010	\$2.457	742.7	\$1.343	1.000	21.9	6.13 ¢/mi	4.09 ¢/mi	10.22 ¢/mi
2015	\$2.848	861.0	\$1.343	1.000	21.9	6.13 ¢/mi	4.09 ¢/mi	10.22 ¢/mi
2020	\$3.302	998.2	\$1.343	1.000	21.9	6.13 ¢/mi	4.09 ¢/mi	10.22 ¢/mi
2025	\$3.828	1157.1	\$1.343	1.000	21.9	6.13 ¢/mi	4.09 ¢/mi	10.22 ¢/mi
2030	\$4.437	1341.4	\$1.343	1.000	21.9	6.13 ¢/mi	4.09 ¢/mi	10.22 ¢/mi

Inflation Assumption (2003 - 2030) = 3.0%

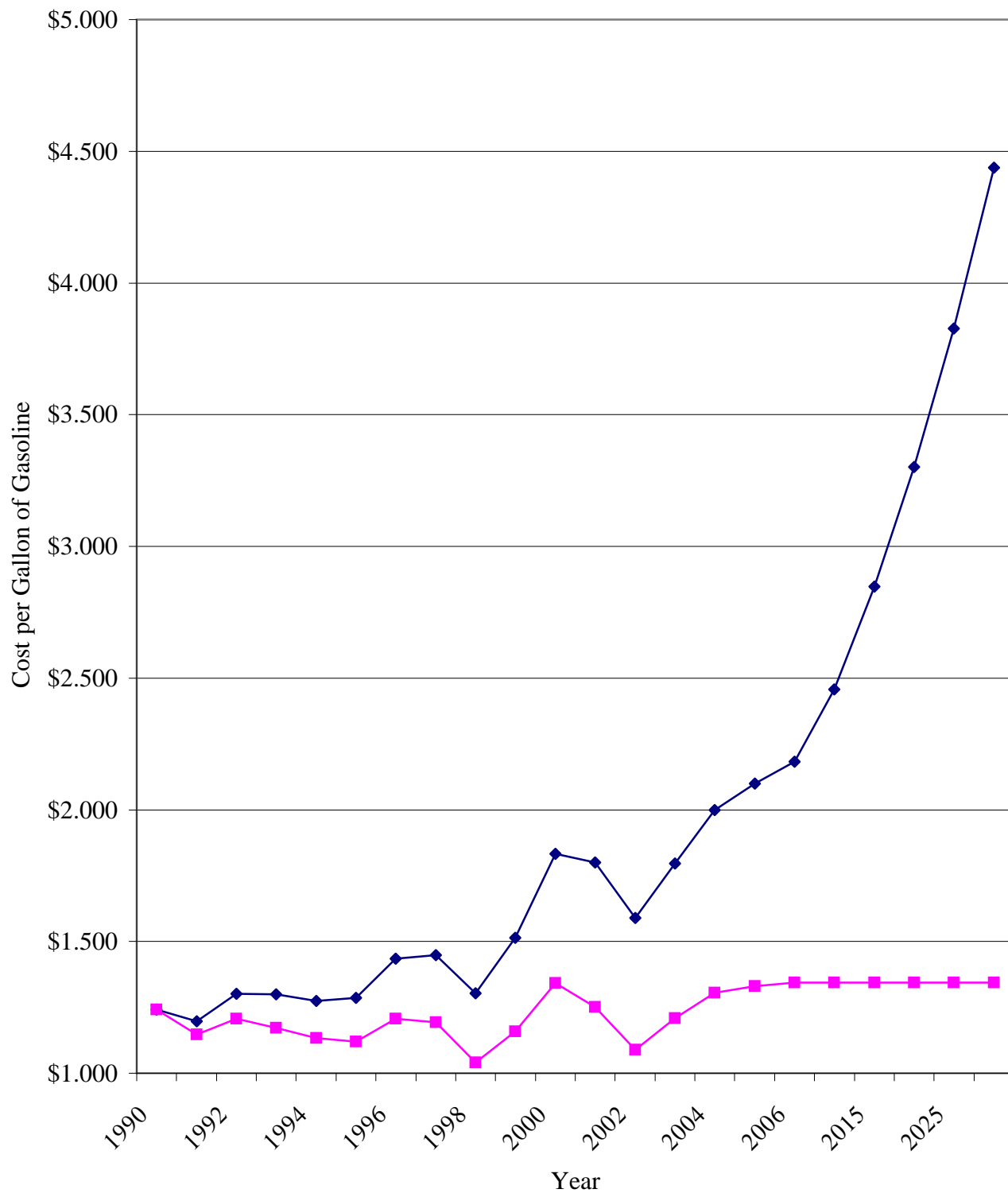
Notes:

1. Future gas price of \$1.343 (1990 dollars) is equivalent to \$1.83/gallon in 2000 current dollars.
2. Future gas price based on California Energy Commission and US Dept. of Energy Energy Information Administration estimates. These range from \$1.09/gallon (CEC) to approximately \$1.38/gallon (EIA). EIA estimates range from \$1.265 to \$1.380 per gallon. CEC gas price estimates are based on base year (2000) gas price of \$1.50/gallon in 2000 dollars, and future gas prices remaining at year 2000 levels (e.g., \$1.50/gallon for future years.)
3. Future non-gasoline operating cost based on assumption that it is 60% of auto gasoline cost.
4. No change in overall fleet fuel economy is assumed. This respects the no change in fuel economy trend shown by the US Energy Information Agency (EIA) in their "Household Vehicles Energy Consumption Report" (September 1997).
5. Future year estimates prepared 3/8/2004

**Figure 1**  
**Auto Operating Costs (Cents/Mile)**  
**Gasoline and Non-Gasoline Operating Costs, 1990-2030**



**Figure 2**  
**San Francisco Bay Area Gasoline Prices - 1990-2030**  
**Current Dollars and 1990 Constant Dollars**

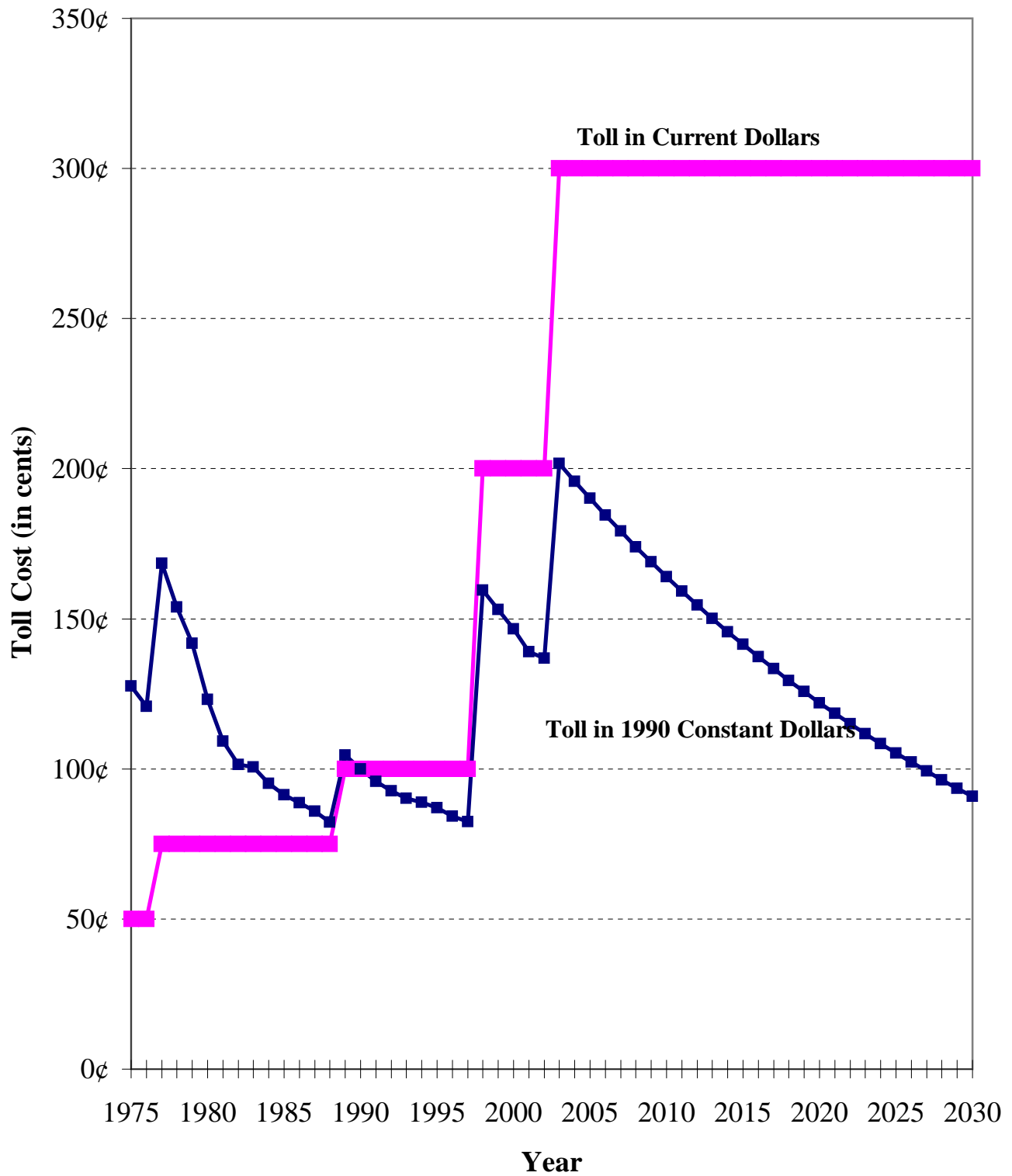


**Table 4**  
**Impact of Inflation on Bay Bridge Tolls, 1975 - 2030**

Year	CPI-U	San Francisco/Oakland Bay Bridge Toll	
	All Items	(current \$)	(1990 \$)
1975	159.1	50¢	127.6¢
1976	168.0	50¢	120.8¢
1977	180.8	75¢	168.4¢
1978	197.8	75¢	153.9¢
1979	214.6	75¢	141.9¢
1980	247.3	75¢	123.1¢
1981	279.0	75¢	109.1¢
1982	300.0	75¢	101.5¢
1983	302.5	75¢	100.7¢
1984	319.8	75¢	95.2¢
1985	333.1	75¢	91.4¢
1986	343.2	75¢	88.7¢
1987	354.7	75¢	85.8¢
1988	370.4	75¢	82.2¢
1989	388.5	100¢	104.5¢
1990	406.0	100¢	100.0¢
1991	423.9	100¢	95.8¢
1992	438.1	100¢	92.7¢
1993	449.9	100¢	90.2¢
1994	457.1	100¢	88.8¢
1995	466.0	100¢	87.1¢
1996	482.3	100¢	84.2¢
1997	493.0	100¢	82.4¢
1998	508.8	200¢	159.6¢
1999	530.2	200¢	153.1¢
2000	553.9	200¢	146.6¢
2001	583.9	200¢	139.1¢
2002	593.2	200¢	136.9¢
2003	603.9	300¢	201.7¢
2004	622.0*	300¢	195.8¢
2005	640.7*	300¢	190.1¢
2006	659.9*	300¢	184.6¢
2007	679.7*	300¢	179.2¢
2008	700.1*	300¢	174.0¢
2009	721.1*	300¢	168.9¢
2010	742.7*	300¢	164.0¢
2011	765.0*	300¢	159.2¢
2012	788.0*	300¢	154.6¢
2013	811.6*	300¢	150.1¢
2014	835.9*	300¢	145.7¢
2015	861.0*	300¢	141.5¢
2016	886.8*	300¢	137.3¢
2017	913.5*	300¢	133.3¢
2018	940.9*	300¢	129.5¢
2019	969.1*	300¢	125.7¢
2020	998.2*	300¢	122.0¢
2021	1028.1*	300¢	118.5¢
2022	1058.9*	300¢	115.0¢
2023	1090.7*	300¢	111.7¢
2024	1123.4*	300¢	108.4¢
2025	1157.1*	300¢	105.3¢
2026	1191.8*	300¢	102.2¢
2027	1227.6*	300¢	99.2¢
2028	1264.4*	300¢	96.3¢
2029	1302.4*	300¢	93.5¢
2030	1341.4*	300¢	90.8¢

\* Assumes 3% per year annual inflation

**Figure 3**  
**Bay Bridge Tolls**  
**1990 and Current Dollars**



**Table 5**  
**History of Transit Fares in Bay Area, 1970-1998**

	MUNI	AC Transit	BART Trains	BART Bus	SCVTA	SamTrans	GGBHTD Bus	GGBHTD Ferry	CalTrain	CCCTA	Vallejo Bus	Vallejo Ferry	AMTRAK	Napa Valley
<b>1970</b>														
<b>Base</b>	\$ 0.25	\$ 0.25				n.a.	n.a.	\$ 0.50	\$ 0.33			n.a.		
<b>High</b>		\$ 0.80							\$ 0.67					
<b>1975</b>														
<b>Base</b>	\$ 0.25	\$ 0.30	\$ 0.25	\$ 0.25	\$ 0.25	n.a.	\$ 0.35	\$ 0.50	\$ 0.35	n.a.	\$ 0.25	n.a.		
<b>High</b>		\$ 1.40	\$ 1.45	\$ 0.50			\$ 1.50		\$ 0.71					
<b>1980</b>														
<b>Base</b>	\$ 0.50	\$ 0.50	\$ 0.35		\$ 0.35	\$ 0.25	\$ 0.35	\$ 1.50	\$ 0.71	\$ 0.25	\$ 0.35	n.a.		
<b>High</b>		\$ 1.50	\$ 1.50		\$ 0.75	\$ 1.25	\$ 2.50	\$ 2.00	\$ 1.47	\$ 0.50				
<b>1985</b>														
<b>Base</b>	\$ 0.60	\$ 0.60	\$ 0.60	\$ 0.60	\$ 0.60	\$ 0.35	\$ 1.00	\$ 2.10	\$ 0.86	\$ 0.60		n.a.		
<b>High</b>		\$ 1.75	\$ 2.15	\$ 0.90	\$ 1.00	\$ 1.35	\$ 3.30	\$ 2.50	\$ 1.80					
<b>1990</b>														
<b>Base</b>	\$ 0.85	\$ 1.00	\$ 0.80	\$ 0.75	\$ 0.75	\$ 0.50			\$ 0.86	\$ 0.60				n.a.
<b>High</b>	\$ 2.00	\$ 2.00	\$ 3.00	\$ 1.15	\$ 1.00	\$ 1.95			\$ 1.92					
<b>1995</b>														
<b>Base</b>	\$ 1.00	\$ 1.25	\$ 0.90		\$ 1.10	\$ 1.00	\$ 1.25		\$ 0.73	\$ 1.00	\$ 1.00	\$ 6.36		\$ 1.00
<b>High</b>	\$ 2.00	\$ 2.20	\$ 3.55		\$ 2.25	\$ 2.50	\$ 4.50		\$ 3.64	\$ 1.25	\$ 2.00			\$ 2.50
<b>1996</b>														
<b>Base</b>			\$ 1.00		\$ 1.10		\$ 1.25	\$ 2.50						
<b>High</b>			\$ 4.00		\$ 2.25		\$ 4.50	\$ 4.25						
<b>1997</b>														
<b>Base</b>			\$ 1.10	\$ 1.10					\$ 0.77					
<b>High</b>			\$ 4.70	\$ 1.65					\$ 3.83					
<b>1998</b>														
<b>Base</b>									\$ 0.80		\$ 3.33			
<b>High</b>									\$ 4.02					

MUNI : High fare is for cable cars.

Benicia: High fare is for patrons travelling between Vallejo and Contra Costa County

Vallejo Ferry is monthly pass divided by 42 rides.

SamTrans: High fare is for all express routes, except 1F/19F

Oakland/Alameda Ferry: Prices are per trip cost of 10-ticket book (1990)



**Table 5 (continued)**  
**History of Transit Fares in Bay Area, 1970-1998**

	Napa City		Tri- Delta		Benicia		Union City		LAVTA	30-Z	DB	WestCat	CityCoach (Vaca)		Flyer (Fairfld)	Oak/Ala Ferry	Sta Rosa City Bus	Sonoma County		Petaluma							
1970																											
Base High																											
1975																											
Base High	\$	0.25	\$	0.25															\$	0.25			\$	0.25			
1980																											
Base High	\$	0.35	\$	0.25					\$	0.50				\$	0.60				\$	0.35	\$	0.35					
1985																											
Base High					\$	0.50			\$	0.50			\$	0.60	\$	1.25				\$	0.60						
									\$	0.85	\$	-															
1990																											
Base High	\$	0.60	\$	0.60	\$	0.75	\$	0.75	\$	0.60	\$	1.00	\$	0.75	\$	0.75	\$	0.75	\$	2.50							
					\$	1.50					\$	1.50															
1995																											
Base High	\$	0.75	\$	0.75	\$	0.75	\$	0.75	\$	1.00				\$	0.75				\$	0.85	\$	1.05	\$	1.05			
					\$	1.50																					
1996																											
Base High					\$	0.75																					
1997																											
Base High											\$	0.75						\$	2.75	\$	1.00						
											\$	1.75															
1998																											
Base High											\$	1.00															
											\$	2.00															

MUNI : High fare is for cable cars.

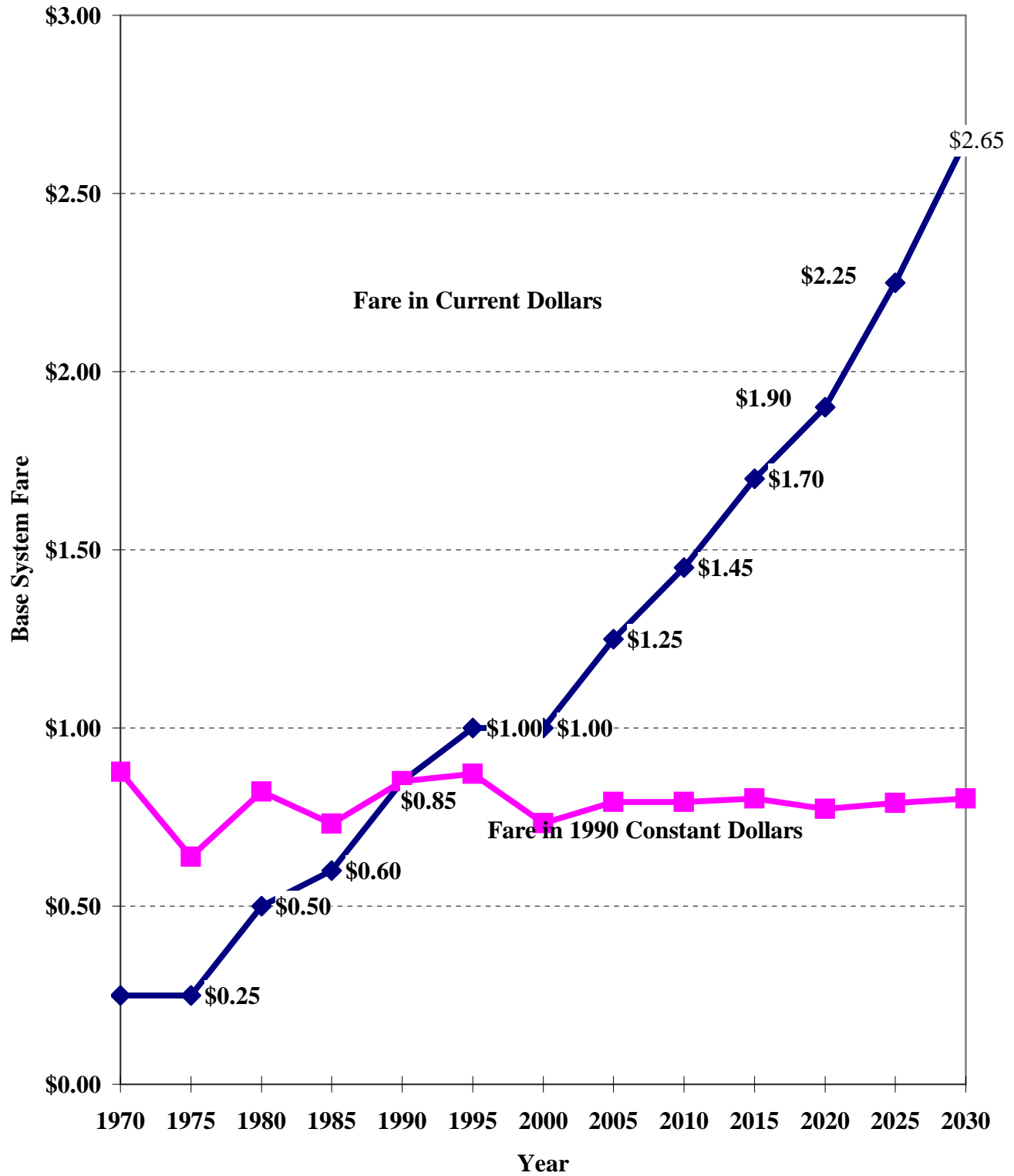
Benicia: High fare is for patrons travelling between Vallejo and Contra Costa County

Vallejo Ferry is monthly pass divided by 42 rides.

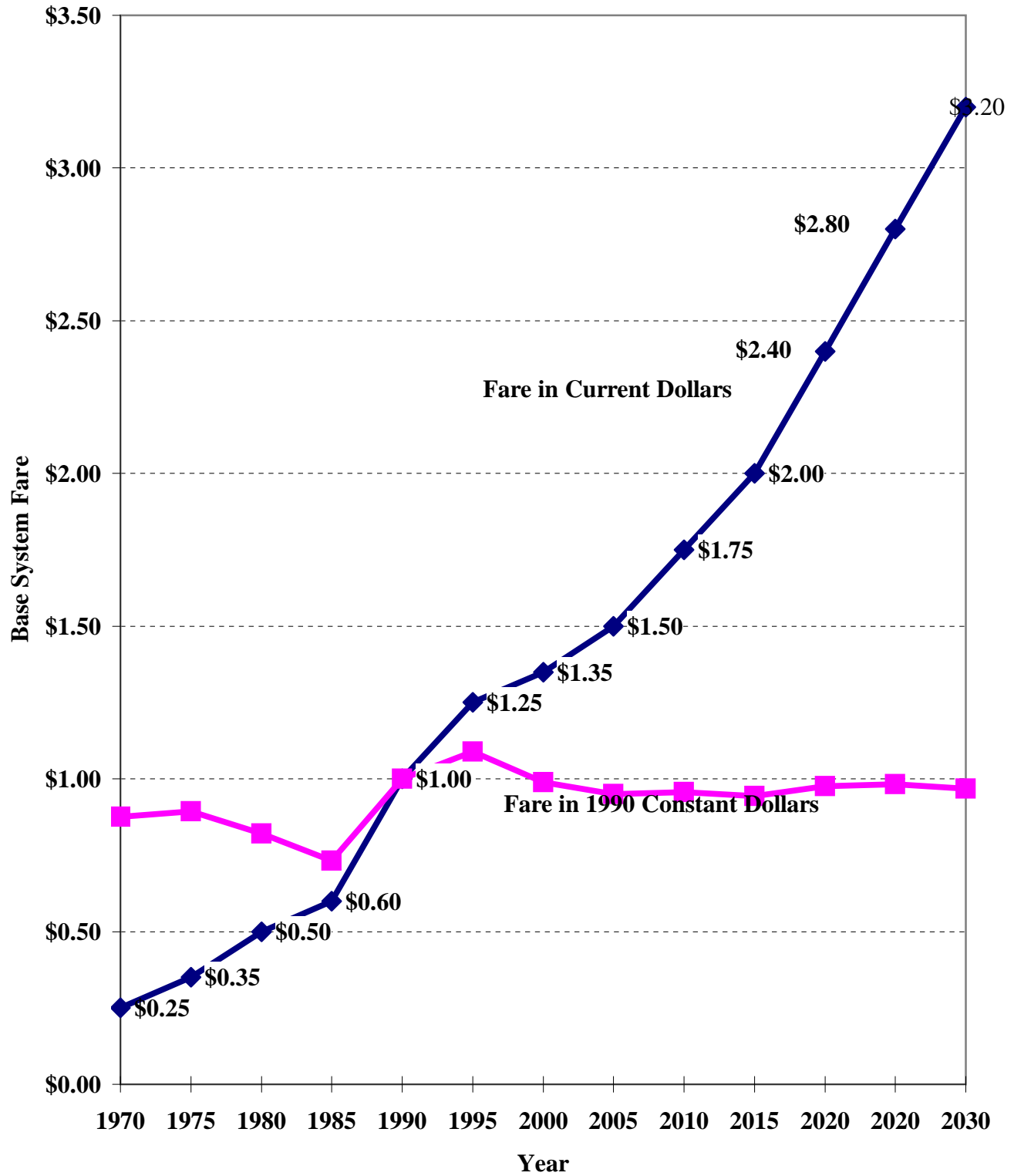
SamTrans: High fare is for all express routes, except 1F/19F

Oakland/Alameda Ferry: Prices are per trip cost of 10-ticket book (1990)

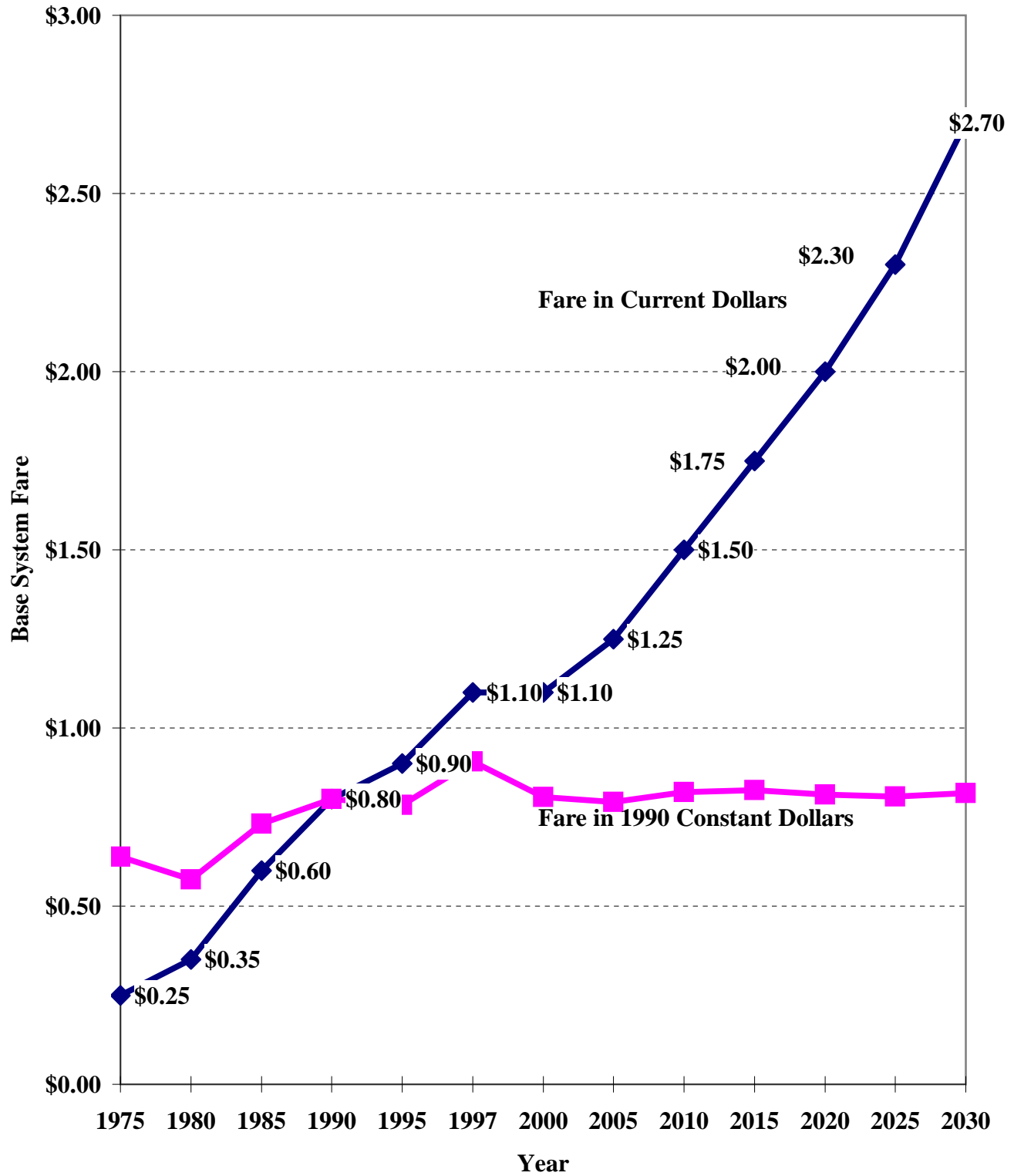
**Figure 4.1**  
**San Francisco Municipal Railway (Muni)**  
**Base Fare: Historical and Projected**



**Figure 4.2**  
**A.C. Transit District**  
**Base Fare: Historical and Projected**



**Figure 4.3**  
**Bay Area Rapid Transit District (BART)**  
**Base Fare: Historical and Projected**



**Table 6.1**  
**Regional Highway Peaking Factors for AM and PM Peak Hours**  
**"Old-Style" MTCFCAST Model System**

AM/PM Peak Hour Trip Purpose	Trip Direction	1965 Survey	1981 Survey	1990 Survey	All Forecasts
<i>AM Peak Hour Factors</i>					
Home-Based Work	H → W	0.17021	0.15656	0.15436	NA
Weighted Average	W → H	0.00462	0.00483	0.00329	NA
Home-Based Non-Work	H → NW	0.03162	0.04146	0.05319	0.04476
	NW → H	0.01261	0.01459	0.01549	0.01576
Non-Home-Based	NW → NW	0.02077	0.02404	0.02797	0.02404
HBW Drive Alone	H → W	NA	0.14597	0.14418	0.14597
	W → H	NA	0.00514	0.00352	0.00514
HBW Shared Ride 2+	H → W	NA	0.17763	0.18514	0.17763
	W → H	NA	0.00172	0.00158	0.00172
<i>PM Peak Hour Factors</i>					
Home-Based Work	H → W	0.00686	0.00801	0.00788	NA
Weighted Average	W → H	0.15601	0.12637	0.12533	NA
Home-Based Non-Work	H → NW	0.03162	0.03528	0.02769	0.03626
	NW → H	0.05506	0.06155	0.05050	0.06325
Non-Home-Based	NW → NW	0.08814	0.08388	0.08207	0.08388
HBW Drive Alone	H → W	NA	0.00790	0.00837	0.00790
	W → H	NA	0.12661	0.12612	0.12661
HBW Shared Ride 2+	H → W	NA	0.00857	0.00661	0.00857
	W → H	NA	0.13595	0.12066	0.13595
Bay Bridge Spread Peak Factor		NA	NA	NA	0.62000
Ala/SC Spread Peak Factor		NA	NA	NA	0.70000

**Table 6.2**

**Regional Highway Peaking Factors for AM and PM Peak Periods**  
**"New-Style" BAYCAST Model System**

AM/PM Peak Period		1990	All
Trip Purpose	Trip Direction	Survey	Forecasts
<i><u>AM Peak Period Factors (0700-0900)</u></i>			
Home-Based Work	H → W	0.26974 *	0.26974 *
Weighted Average	W → H	0.00661	0.00661
Home-Based Non-Work (HBSH, HBSR)	H → NW	0.06662	0.06662
	NW → H	0.02719	0.02719
Home-Based School	H → School	0.28402	0.28402
	School → H	0.01141	0.01141
Non-Home-Based	NW → NW	0.05679	0.05679
HBW Drive Alone	H → W	0.25530 *	0.25530 *
	W → H	0.00707	0.00707
HBW Shared Ride 2+	H → W	0.31213 *	0.31213 *
	W → H	0.00421	0.00421
<i><u>PM Peak Period Factors (1600-1800)</u></i>			
Home-Based Work	H → W	0.01584	0.01584
Weighted Average	W → H	0.20792	0.20792
Home-Based Non-Work (HBSH, HBSR)	H → NW	0.06230	0.06230
	NW → H	0.10329	0.10329
Home-Based School	H → School	0.02684	0.02684
	School → H	0.05724	0.05724
Non-Home-Based	NW → NW	0.14901	0.14901
HBW Drive Alone	H → W	0.01644	0.01644
	W → H	0.20856	0.20856
HBW Shared Ride 2+	H → W	0.01529	0.01529
	W → H	0.20548	0.20548

*\* Factors for AM peak period home-to-work trips are for illustrative use only. HBW departure time choice model is used in model application.*

**Table 7**  
**Year 1990 AM Peak Period Calibration Factors ("Peak Spreading Factors"), Superdistrict-to-Superdistrict**

From	To:																																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34		
1	--	--	--	--	0.60	0.60	0.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
2	--	--	--	--	0.60	0.60	0.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
3	--	--	--	--	0.60	0.60	0.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
4	--	--	--	--	0.60	0.60	0.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
5	0.65	0.65	0.65	0.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
6	0.65	0.65	0.65	0.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
7	0.65	0.65	0.65	0.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
8	0.70	0.70	0.70	0.70	0.30	0.30	0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
9	0.70	0.70	0.70	0.70	0.45	0.45	0.45	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
10	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
11	0.70	0.70	0.70	0.70	0.45	0.45	0.45	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
15	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
16	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
17	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
18	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
19	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	0.40	0.40	0.40	0.40	0.40	0.70	0.70	0.70	0.70	0.70	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80	0.80
20	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.80	0.32	0.32	0.32	0.32	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
21	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.48	0.80	0.80	0.80	0.80	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
22	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.48	0.80	0.80	0.80	0.80	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
23	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.48	0.80	0.80	0.80	0.80	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
24	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.48	0.80	0.80	0.80	0.80	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
25	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.62	0.70	0.70	0.70	0.70	0.70	0.62	0.62	0.62	0.62	--	--	--	--	0.50	0.50	0.50	--	--	--	
26	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.62	0.70	0.70	0.70	0.70	0.70	0.70	0.62	0.62	0.62	0.62	--	--	--	--	0.50	0.50	0.50	--	--	--
27	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.62	0.70	0.70	0.70	0.70	0.70	0.70	0.62	0.62	0.62	0.62	0.40	0.40	--	--	--	--	--	--	--	
28	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.62	0.70	0.70	0.70	0.70	0.70	0.70	0.62	0.62	0.62	0.62	0.40	0.40	--	--	--	--	--	--	--	
29	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.40	0.40	--	--	--	--	--	--	--	
30	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.40	0.40	--	--	--	--	--	--	--	--	
31	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.40	0.40	--	--	--	--	--	--	--	--	
32	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	--	--	--	--	--	--	--	--	--	--	
33	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	--	--	--	--	--	--	--	--	--	--	
34	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	--	--	--	--	--	--	--	--	--	--	

**Table 8**  
**Regional Work and Non-Work Trip Vehicle Occupancies**  
**Historical and Projected**

Trip Purpose	Household Surveys			Model Simulation	
	1965	1981	1990	1990	2025
Home-Based Work	1.180	1.129	1.095†	1.097*	1.100*
Home-Based Shop	1.443	1.241	1.416§	1.423*	1.414*
Home-Based Social / Rec	1.813	1.730	1.584§	1.582*	1.583*
Home-Based School	2.782	2.234	2.373§		
Home-Based Grade School			NA	NA	NA
Home-Based High School			3.205§	4.200*	3.970*
Home-Based College			1.164§	1.261*	1.331*
Non-Home-Based	1.445	1.254	1.206§	1.207*	1.253*
Total Trips	1.440	1.303	1.299§	1.328*	1.325*

*1965, 1981 and 1990 vehicle occupancy rates derived from household travel surveys.*

*\* Regional Model Simulation using BAYCAST system, not assumed.*

*† Source: 1990 Census-based Observed Home-Based Work trips.*

*Standard Vehicle Occupancy Assumptions:*

*Drive Alone = 1.0 persons per vehicle*

*Shared Ride 2 = 2.0 persons per vehicle*

*Shared Ride 3+ = 3.5 persons per vehicle*

Note: The vehicle occupancy rates for home-based shop and social/recreation trips are based on vehicle driver vs. vehicle passenger data from the 1965 and 1981 surveys. For the 1990 survey, the vehicle occupancy rates are based on drive alone, shared ride 2 and shared ride 3+ data. The vehicle occupancy data from the three household survey datasets are not strictly comparable, given the incomplete information on vehicle occupants obtained from household travel surveys.



**Table 9**  
**Ratio of Gas Prices in San Francisco and Los Angeles**

		San Francisco	Los Angeles	Ratio SF/LA	Difference SF - LA
January	2001	\$1.760	\$1.609	1.09	\$0.151
February	2001	\$1.758	\$1.666	1.06	\$0.092
March	2001	\$1.830	\$1.708	1.07	\$0.122
April	2001	\$1.943	\$1.826	1.06	\$0.117
May	2001	\$2.035	\$2.067	0.98	-\$0.032
June	2001	\$2.006	\$2.049	0.98	-\$0.043
July	2001	\$1.883	\$1.896	0.99	-\$0.013
August	2001	\$1.709	\$1.650	1.04	\$0.059
September	2001	\$1.856	\$1.670	1.11	\$0.186
October	2001	\$1.758	\$1.529	1.15	\$0.229
November	2001	\$1.638	\$1.347	1.22	\$0.291
December	2001	\$1.419	\$1.158	1.23	\$0.261
January	2002	\$1.325	\$1.237	1.07	\$0.088
February	2002	\$1.313	\$1.383	0.95	-\$0.070
March	2002	\$1.492	\$1.585	0.94	-\$0.093
April	2002	\$1.679	\$1.693	0.99	-\$0.014
May	2002	\$1.638	\$1.657	0.99	-\$0.019
June	2002	\$1.667	\$1.658	1.01	\$0.009
July	2002	\$1.698	\$1.673	1.01	\$0.025
August	2002	\$1.680	\$1.684	1.00	-\$0.004
September	2002	\$1.662	\$1.677	0.99	-\$0.015
October	2002	\$1.632	\$1.619	1.01	\$0.013
November	2002	\$1.703	\$1.666	1.02	\$0.037
December	2002	\$1.667	\$1.613	1.03	\$0.054
January	2003	\$1.744	\$1.693	1.03	\$0.051
February	2003	\$1.950	\$1.878	1.04	\$0.072
March	2003	\$2.186	\$2.165	1.01	\$0.021
April	2003	\$2.149	\$2.122	1.01	\$0.027
May	2003	\$1.952	\$1.879	1.04	\$0.073
June	2003	\$1.875	\$1.766	1.06	\$0.109
July	2003	\$1.907	\$1.737	1.10	\$0.170
August	2003	\$1.968	\$1.917	1.03	\$0.051
September	2003	\$2.139	\$2.083	1.03	\$0.056
October	2003	\$1.897	\$1.889	1.00	\$0.008
November	2003	\$1.750	\$1.757	1.00	-\$0.007
December	2003	\$1.667	\$1.715	0.97	-\$0.048

**Table 10**  
**2025 Tolls on Bay Area Bridges**

*All Alternatives*

Bridge	Share of Discounted Tolls	Full Price Toll (2025 \$)	Discounted Toll (2025 \$)	Average Toll (2025 \$)	Average Toll (1990 \$)	Avg. Toll / 2 (1990\$)
Benicia	0%	\$3.00	\$3.00	\$3.00	\$1.05	\$0.53
Carquinez	0%	\$3.00	\$3.00	\$3.00	\$1.05	\$0.53
San Rafael	0%	\$3.00	\$3.00	\$3.00	\$1.05	\$0.53
Golden Gate	0%	\$3.00	\$3.00	\$3.00	\$1.05	\$0.53
Bay Bridge	0%	\$3.00	\$3.00	\$3.00	\$1.05	\$0.53
San Mateo	0%	\$3.00	\$3.00	\$3.00	\$1.05	\$0.53
Dumbarton	0%	\$3.00	\$3.00	\$3.00	\$1.05	\$0.53
Antioch	0%	\$3.00	\$3.00	\$3.00	\$1.05	\$0.53

CPI: 1990=406.0; 2025=1157.1; Ratio 0.3509



**Table 11**  
**Speed/Capacity Table (With Post-Processing Speeds)**  
**San Francisco Bay Area Regional Highway Networks**

Area Type	Facility Type								Speed Class*	
	Frwy-to-Frwy (1)	Freeway (2)	Expwy (3)	Collector (4)	Fwy Ramp (5)	Dummy (6)	Major Arterial (7)	Metered Ramp (8)	Special (9)	Special (10)
Core (0)	1,700 40	1,850 55	1,300 40 (25)	550 10 (5)	1,300 30 (25)	N.A.	800 20 (15)	700 25 (20)	1,900 <sup>(A)</sup> 55	1,350 <sup>(G)</sup> 40 (25)
CBD (1)	1,700 40	1,850 55	1,300 40 (25)	600 15 (10)	1,300 30 (25)	N.A.	850 25 (20)	700 25 (20)	1,950 <sup>(B)</sup> 60	1,500 <sup>(H)</sup> 45 (30)
UBD (2)	1,750 45	1,900 60	1,450 45 (30)	650 20 (15)	1,400 35 (30)	N.A.	900 30 (25)	800 30 (25)	2,000 <sup>(C)</sup> 65	1,530 <sup>(I)</sup> 55 (40)
Urban (3)	1,750 45	1,900 60	1,450 45 (30)	650 25 (20)	1,400 35 (30)	N.A.	900 30 (25)	800 30 (25)	1,780 <sup>(D)</sup> 50	900 <sup>(J)</sup> 25 (20)
Suburb.(4)	1,800 50	1,950 65	1,500 50 (35)	800 30 (25)	1,400 40 (35)	N.A.	950 35 (30)	900 35 (30)	1,800 <sup>(E)</sup> 45	950 <sup>(K)</sup> 30 (25)
Rural (5)	1,800 50	1,950 65	1,500 55 (40)	850 35 (30)	1,400 40 (35)	N.A.	950 40 (35)	900 35 (30)	1,840 <sup>(F)</sup> 50	980 <sup>(L)</sup> 40 (35)

Upper Entry: Capacity at Level of Service "E" in vehicles per hour per lane, i.e., ultimate capacity

Lower Entry: Free-Flow Speed (miles per hour)

\* Speed Class = (Area Type \* 10) + Facility Type

N.A. = Not Applicable

Notes:

(A) TOS Fwy (AT=0,1); (B) TOS Fwy (AT=2,3); (C) TOS Fwy (AT=4,5); (D) Golden Gate; (E) TOS Fwy-to-Fwy (AT=0-3); (F) TOS Fwy-to-Fwy (AT=4,5)

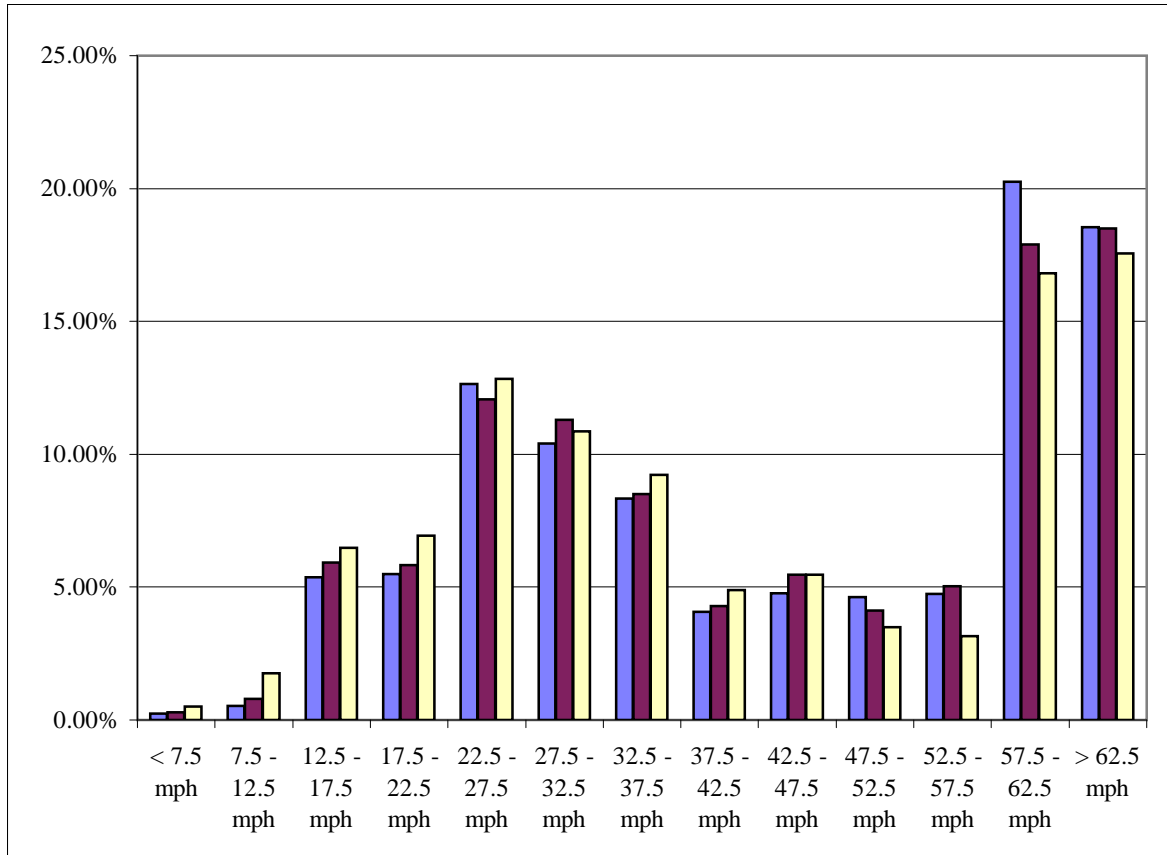
(G) Expwy TOS (AT=0,1); (H) Expwy TOS (AT=2,3); (I) Expwy TOS (AT=4,5); (J) Art.Sig.Coar. (AT=0,1); (K) Art.Sig.Coar. (AT=2,3); (L) Art.Sig.Coar. (AT=4,5)

*Speed values in parentheses are used in MTC speed post-processing routine.*

**Table 12**

**Distribution of Average Weekday Daily Vehicle Miles of Travel (VMT)  
by Average Link Speed (mph)  
(13 Speed Cohorts used in ARB BURDEN Models)  
Forecasts Prepared for 2001 Update of Regional Transportation Plan**

		<u>1998 Base Year</u>		<u>2010 Intermediate Year</u>		<u>2025 RTP Project</u>	
Speed Cohort		VMT	% of Total	VMT	% of Total	VMT	% of Total
1	< 7.5 mph	298,127	0.23%	474,213	0.29%	961,118	0.50%
2	7.5 - 12.5 mph	665,901	0.52%	1,313,303	0.80%	3,340,600	1.75%
3	12.5 - 17.5 mph	6,898,801	5.37%	9,711,410	5.93%	12,365,345	6.49%
4	17.5 - 22.5 mph	7,037,531	5.48%	9,526,100	5.82%	13,228,835	6.94%
5	22.5 - 27.5 mph	16,240,227	12.65%	19,734,795	12.06%	24,453,381	12.83%
6	27.5 - 32.5 mph	13,354,047	10.40%	18,470,151	11.29%	20,711,967	10.87%
7	32.5 - 37.5 mph	10,683,363	8.32%	13,929,995	8.51%	17,594,278	9.23%
8	37.5 - 42.5 mph	5,212,176	4.06%	7,026,185	4.29%	9,332,457	4.90%
9	42.5 - 47.5 mph	6,112,561	4.76%	8,962,191	5.48%	10,407,492	5.46%
10	47.5 - 52.5 mph	5,949,564	4.63%	6,724,680	4.11%	6,675,930	3.50%
11	52.5 - 57.5 mph	6,086,036	4.74%	8,244,622	5.04%	6,011,440	3.15%
12	57.5 - 62.5 mph	26,016,616	20.27%	29,288,993	17.90%	32,051,431	16.82%
13	> 62.5 mph	23,818,456	18.55%	30,262,582	18.49%	33,456,341	17.55%
TOTAL		128,373,407	100.00%	163,669,221	100.00%	190,590,615	100.00%





**Table 13**  
**Changes in Transit Operator Base Fares, 1998 to 2004**

Operator	1998 Fare	2001 Fare	2004 Fare	Percent Change, 2001-2004	Date of Previous Change	Date of Recent Change
Muni	\$1.00	\$1.00	\$1.25	25.0%	1995	9/1/2003
BART	\$1.10	\$1.10	\$1.25	13.6%	1997	1/1/2004
AC Transit	\$1.25	\$1.35	\$1.50	11.1%	10/1/1999	9/1/2003
SCVTA-Local	\$1.10	\$1.25	\$1.50	20.0%	7/1/2002	8/1/2003
SCVTA-Express	\$1.75	\$2.00	\$3.00	50.0%	7/1/2002	8/1/2003
SamTrans	\$1.00	\$1.10	\$1.25	13.6%	8/15/1999	9/1/2003
Golden Gate (Marin)	\$1.25	\$1.50	\$1.80	20.0%	7/1/1999	7/1/2003
Golden Gate (Sonoma)	\$1.75	\$2.15	\$2.45	14.0%	7/1/2000	7/1/2003
Caltrain	\$1.11	\$1.11	\$1.50	35.1%	1998	7/1/2002
CCCTA	\$1.00	\$1.25	\$1.50	20.0%	9/1/1997	9/8/2002
Vallejo	\$1.00	\$1.25	\$1.35	8.0%	1/1/2000	
Tri-Delta	\$0.75	\$0.75	\$1.00	33.3%	7/1/1997	
WHEELS (LAVTA)	\$1.00	\$1.00	\$1.25	25.0%	1995	8/1/2003

Notes:

1. For the 1998 RTP, fares as of February 1998 were used. For the 2001 RTP, fares as of May 2001 were used.  
For the 2005 RTP/TIP, fares as of March 2004 will be used.
2. Transit fares are from MTC records, and the Web site: <http://www.transitinfo.org/>
3. Caltrain fares are based on a 10-ride ticket book.
4. LAVTA increased adult fares to \$1.25 on 11/1/01.
4. Golden Gate Transit fares shown are for intra-Marín and intra-Sonoma counties. Golden Gate Transit District increased fares on an annual basis between 1999-2001. The fare increases of 7/1/00 were used in the 2001 RTP.